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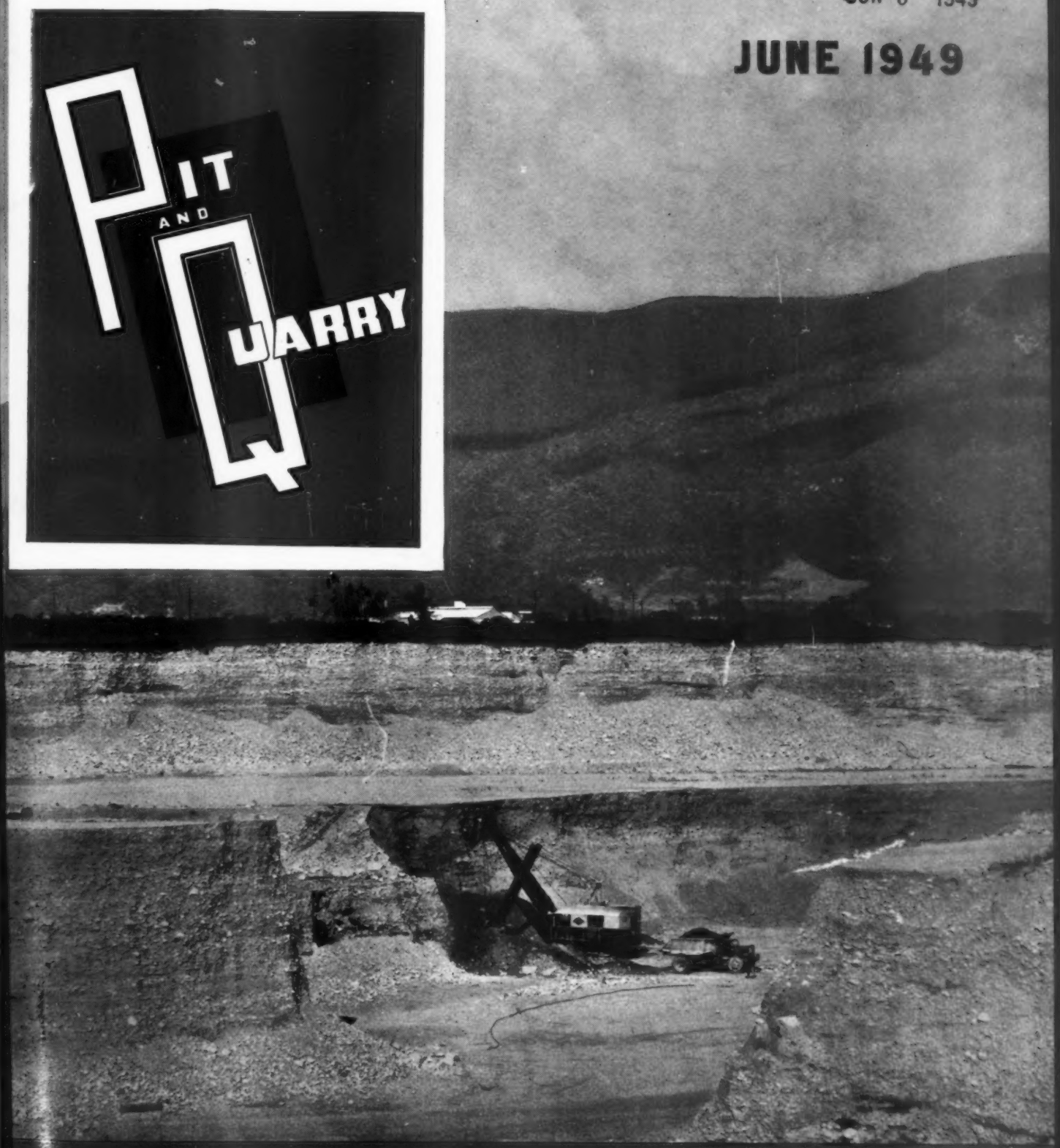
PIT AND QUARRY



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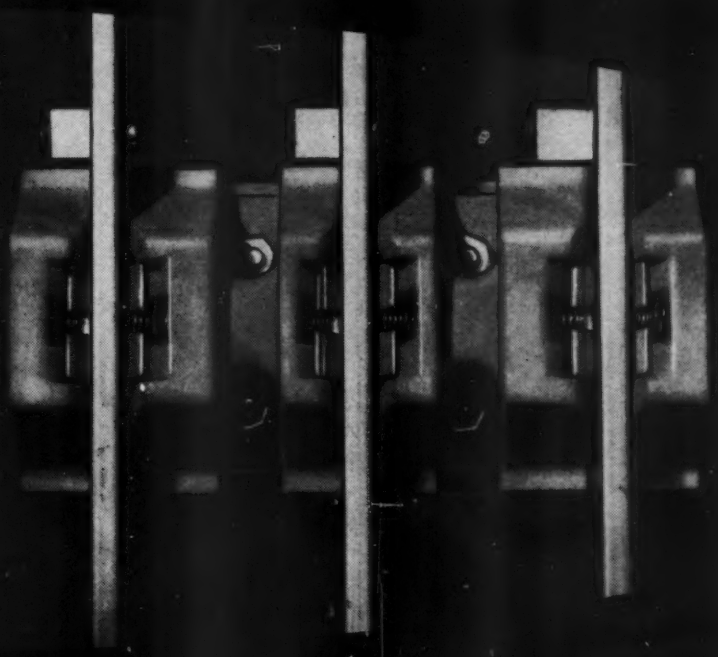

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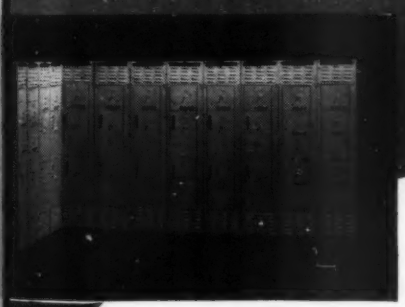

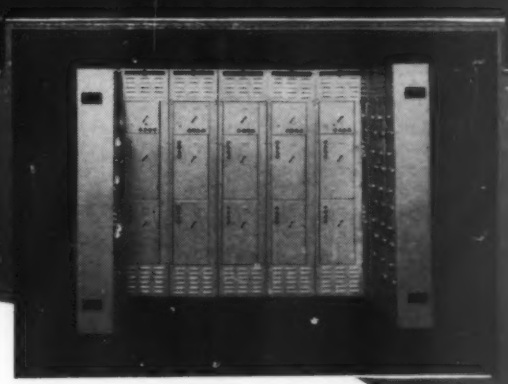

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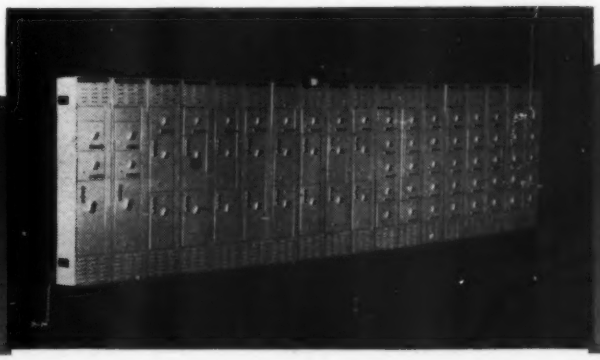

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PIT AND QUARRY

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"now – with Gulf H.P. Grease

our shaker screen bearings run cool and trouble-free" says Superintendent

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GULF INDUSTRIAL LUBRICATION

editorial

Let's Look at the Facts

FOR the past few months the newspapers and the air waves have been loaded down with all kinds of information, rumor and speculation on the current decline in business activity and the prospects for the future. As has nearly always been the case in similar circumstances the most pessimistic and spectacular utterances have received the widest publicity and in this lies the greatest danger, that of a loss of confidence on the part of businessmen and the public which can easily convert a mild and natural recession into a real depression.

Amid all this welter of confused thinking, overcomplicated analysis and lack of confidence, one encounters occasional evidences of the clear and basic thinking which is the first requirement if we are to keep our free economy in a sound and prosperous condition. Such was, for example, a statement issued recently by Henry H. Heimann, executive manager of the National Association of Credit Men, reading as follows:

"Anyone who took the time to think should have realized that it was impossible to expect the war tempo of business to continue. If it had continued it could have eventualy brought complete collapse. It was unhealthy, unreal and highly dangerous. War never brings real prosperity. It is destructive. It only makes people work at a killing pace and suffer more; it pays them off with notes to be liquidated in the future. While it is giving the notes to the people it reaches in and (through inflation) confiscates much of the value of what they had accumulated. However, we have been in and out of wars, or on and off preparation for war for so long a period of time that many people have come to accept war conditions as normal. This is particularly true of our younger people.

"Our present return to competitive conditions in business is only the beginning. The present state of business by any normal peacetime business standards would be judged highly satisfactory. It is surprising that some business men view the present business trend so gloomily. Those who have been through the mill and suffered the throes of a real depression are not so concerned. Instead they are, and have been getting their house in order to meet the new situation, knowing full well that they can do so successfully and that inherently the passing of the easy war business days is a real blessing. The present let-down can be accurately described as being deeper than some business men expected but nevertheless constituting a readjustment that was inevitable and which will make for better business health. Only government and labor, if they choose to do, can turn it into a serious depression. The government can do so by taxation and labor by unwarranted demands that will price the buyer out of the market.

"There will be many more failures, accounts will be harder to collect, products more difficult to sell, break-even points hard to lower—but all these challenges can and will be met. These times call for hard business thinking and quick action to ease the burden of the adjustment. Suppose earnings do drop ten to twenty percent in this year? Business will still have a good return. The earnings you do make in the next few years should be dollars that will buy more."

From many other sources comes similar sound advice but unfortunately very little of this reaches the general public, which after all determines the course of our economy. According to the best and most unbiased sources, the following is an accurate picture of business conditions. There has been a more or less seasonal rise in unemployment, a decline in retail trade, cutbacks in industrial production and in new residential units started, an increasing number of business failures, etc.

However, at the end of the first quarter the favorable indicators began to outweigh the unfavorable. It became evident that, generally speaking, the greatest price declines have been among those commodities which had previously advanced the most, and that this constructive readjustment has brought prices among the various groups closer to the prewar balance than they have been at any time since then.

Retail sales are down in dollar volume but, because of reduced prices, physical volume is about the same. Business outlays for raw materials, new plants and equipment are running at a level only slightly below the postwar peak. Total incomes being received by individuals are at the rate of 220 billion dollars annually, about 5 percent over a year ago and more than double the prewar level. There is a continuing strong demand for steel and automobiles, and total construction activity is running ahead of last year.

As we see it the future course of our economy depends as much on business and public psychology as on the actions of the government and labor. Public buying habits, whether in the purchase of commodities or investments, are the most important factor and any pronounced change in these habits affects the course of business accordingly. The attitude of the public is at present one of uncertainty about the future and it can readily be swayed in either direction. We should be careful, therefore, to see that the facts are put before the public, and in their true relationship to each other.

Drastic changes in business psychology, whether in the reduction of new orders, or in deferred expansion or improvement plans, similarly affect our economy and have a great influence on the attitude of the public. Every business man should be more than usually careful of his words and actions during the next few months.

Walter E. Trumbauer

news of the industry

PIT AND QUARRY

Magee, Brown, McKelvy Of Alpha Portland Cement Honored by Promotions

Three changes in the personnel of the Alpha Portland Cement Company were announced recently. J. F. Magee, executive vice-president since 1944, became president of the firm. G. S. Brown, associated with Alpha since 1898 and chairman of the board of directors since 1935, is now honorary chairman of the board. F. G. McKelvy, Alpha president from 1935 to this year, was elected chairman of the board.

Mr. Magee was graduated from Lafayette College, Easton, Pa., in 1913 and entered the employ of Alpha in that year. He became superintendent of the plant at Martins Creek, Pa., in 1916, and chief engineer for all plants in 1921. He was advanced to plant manager in 1927, and elected vice-president, in charge of operations in 1934. He has participated actively in the Portland Cement Association and is a member of the American Institute of Mining and Metallurgical Engineers, and also a Trustee of Lafayette College, Easton, Pa.

Mr. Brown, graduate of Princeton University, entered the employ of the Alpha Portland Cement Co. at its original plant at Alpha, N. J., in 1898. He was elected secretary-treasurer of the company in 1899, and in 1911 became vice-president in charge of operations. Three years later he was made president.

While president of Alpha, Mr. Brown also served as president of the Portland Cement Association (1927-1928). He is a director of Yale & Towne Manufacturing Company and a member of the American Society for Testing Materials.

Mr. McKelvy, Princeton, 1904, joined Alpha at its home office in Easton, Pa., in 1906. He was advanced to assistant secretary in 1907, made purchasing agent in 1908, elected secretary in 1911, vice-president in 1914, and executive vice-president in 1934.

During his term as president of Alpha, Mr. McKelvy was chairman of the board of directors of the Portland Cement Association (1943). He is a member of the American Society of Mechanical Engineers, the American Society for Testing Materials and a trustee of Lafayette College, Easton, Pa.

From the early days of its history, when Alpha acquired the Whitaker Cement Company at Alpha, N. J., in 1895, total production of the company has increased from 100,000 bbls. annually to 12,000,000 bbls. The original setup—one plant at Alpha—has gradually grown into a chain of eight plants, located at Birmingham, Ala., Cementown, N. Y., Ironton, O., Syracuse, N. Y., LaSalle, Ill., Manheim, W. Va., Martins Creek, Pa., and St. Louis, Mo. The firm's home office is at Easton.

Dewey Portland Cement Co. Begins $1,445,000 Expansion

A $1,445,000 modernization program is under way at the Dewey Portland Cement Co. plant in Bartlesville, Okla. Expansion plans include new shipping facilities, new plant generating equipment, dust collecting machinery, a quarry building and apparatus and coal grinding facilities, according to announcement by D. M. Tyler, spokesman for the firm.

The Crosby Engineering Co., Chicago, is in charge of the work, which is scheduled for completion during the current year.

Coming Events

June 14-15, 1949—Kansas City. Directors' meeting (June 14) and open meeting (June 15), National Agricultural Limestone Association, Inc., Hotel President.

June 27-July 1, 1949—Atlantic City. Fifty-second annual meeting, American Society for Testing Materials, Hotel Chalfonte-Haddon Hall.

October 24-28, 1949 — Chicago. 37th National Safety Congress and Exposition. Stevens, Congress, Morrison, Sherman, Palmer House hotels.

Arizona Portland Cement To Open $1,300,000 Plant With 2000-Bbl. Output

Arizona Portland Cement Company's $1,300,000 cement plant, the first full-scale cement operation in the state, will be completed by early fall, according to reports from Tucson. The big plant, located at Rillito, will soon begin producing cement at the rate of 2000 bbls., or 8000 sacks, daily. Arizona Portland Cement is a subsidiary of the California Portland Cement Company.

From 1905 to 1910 the United States Bureau of Reclamation operated a small cement plant at the site of the Roosevelt Dam. Later private operators purchased the equipment and set it up near Phoenix, but the venture was abandoned after a brief period.

37th National Safety Congress To Convene October 24-28

Dates for the 37th National Safety Congress and Exposition have been released by the National Safety Council. Sessions will convene October 24 to 28, as follows: industrial safety, Stevens, Congress and Morrison hotels; traffic safety, Sherman Hotel; commercial vehicle safety, Palmer House; school, farm and home safety, Morrison.

Requests for further information should be addressed to R. L. Forney, general secretary, National Safety Council, 20 N. Wacker Drive, Chicago 6, Ill.

Kaiser-Controlled Companies Get Detroit Dam Contracts

Recent major cement contracts awarded by the U. S. Army Engineers included one for $28,000,000 to Consolidated Builders Inc., and another for 1,200,000 barrels to the Permanente Cement Company, both Henry J. Kaiser-controlled organizations. The contracts call for cement for the construction of the Detroit Dam near Salem, Ore.

It has been announced that Permanente, which is now supplying cement on a 700,000-bbl. contract for the McNary Dam on the Columbia River, will ship the cement to Portland on the S. S. *Permanente Silverbow.* Bulk trucks will haul the cement from Portland to the dam site. Delivery will begin in 1950.

James Boyd Announces Honor Medals, Certificates For Holmes Safety Awards

Twelve medals of honor to recognize heroism in saving life after accidents at mines and petroleum installations, and 188 certificates of honor in recognition of outstanding contributions to safety in the mines and plants of the mineral industries have been approved by the Joseph A. Holmes Safety Association, according to James Boyd, director of the U. S. Bureau of Mines and president of the association.

These awards were voted by the association—organized in 1916 to perpetuate the work of the late Dr. Joseph Austin Holmes, first director of the Bureau, in promoting safety in the mineral industries—at its annual meeting in the Department of the Interior Building on April 19, 1949. The director of the Bureau of Mines, which sponsors the association's work, is always president of the association by virtue of his office.

Of 149 other certificate awards for outstanding safety records and exceptional success in supervisory work, the association approved 191 certificates of honor, 36 of them for individual presentation; 14 went to cement plants and quarries, and five to nonmetallic mineral mines and companies.

All 12 of the metal of honor recipients risked their own lives to save those of others, Dr. Boyd said, and all but one were successful.

Directors of the association held their annual meeting immediately before approval of the awards. Those present, besides Dr. Boyd, were J. J. Forbes, secretary; A. C. Fieldner of the Bureau, C. M. Smith, consultant, and Harry Gandy of the National Coal Association, members-at-large; Dr. J. J. Rutledge of the Geological Society of America and Coal Mining Institute of America; D. Harrington, honorary member; M. J. Ankeny, Holmes Safety Association; and the following representatives of Holmes Councils: Paul Louque, Stanocola, chapter, Baton Rouge, La.; Dennis J. Keenan, North Cambria Council, Indiana, Pa.; Alfred W. Wagner, Ebensburg Council, Ebensburg, Pa.; Roy C. Estep, Kittanning Council, Kittanning, Pa.; S. A. Magistrella, Indiana Council, Indiana, Pa.; Geo. A. Stachura, Allegheny Valley Council, Pa.

Among those to whom the Association's council awarded certificates of honor for long-time service in promoting health and safety in mining and the minerals industries and for supervising the work of others were the following:

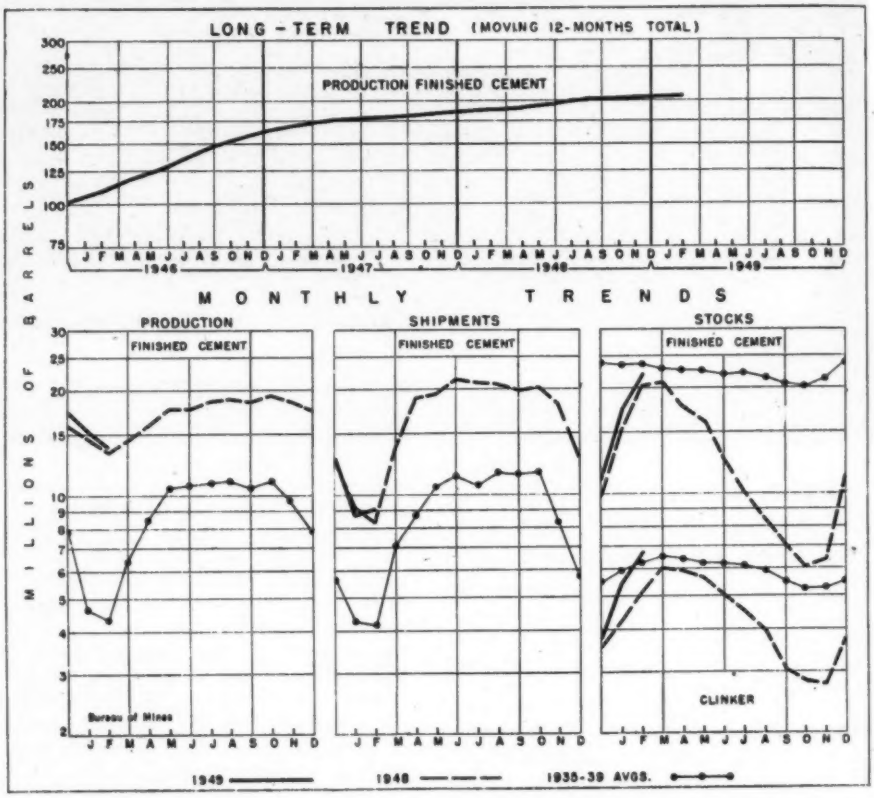
Dan Handley, Alpha Portland Cement Company, Ironton, O., for supervising an underground cement rock mine without a lost-time injury from April 19, 1944, to January 1, 1949, with an average of 70 employees working 515,142 man-hours; Wally Kolar, Alpha Portland Cement Company, Cementon, N. Y., for supervising a cement quarry without a lost-time accident from October 9, 1939, to August 3, 1947, a total of 404,081 man-hours, with an average force of 36 employees; Jesse Kennedy, North American Cement Corporation, Howes Cave, N. Y., for working around cement operations as a carpenter for 50 years without incurring a lost-time accident; Nicholas Troisi, International Salt Company, Retsof, N. Y., for working in and around a salt mine in various occupations for 46 years and 11 months without a lost-time injury.

Certificates of honor for notable achievements in safety also were awarded the following cement plants and quarries:

Catskill quarry, Alpha Portland Cement Co., Cementon, N. Y.; Ironton mine, Alpha Portland Cement Co., Ironton, O.; Martin Creek quarry, Alpha Portland Cement Co., Martins Creek, Pa.; St. Louis quarry, Alpha Portland Cement Co., Lemay, Mo.; cement plant, Ideal Cement Company, Mobile, Ala.; quarry and cement plant, Ideal Cement Co., Devil's Slide, Utah; quarry and cement plant, Ideal Cement Co., Superior, Neb.; Dallas quarry, Lone Star Cement Corp., Dallas, Tex.; Georgia No. 2 plant, Pennsylvania Dixie Cement Co., Clinchfield, Ala.; Haverstraw quarry, New York Trap Rock Corp., Haverstraw, N. Y.; Stoneco quarry, New York Rock Corp., Stoneco, N. Y.; Tomkins Cove quarry, New York Trap Rock Corp., Tomkins Cove, N. Y.; Monarch quarry, Colorado Fuel and Iron Corp., Garfield, Colo.; and National City quarry, National Gypsum Co., National City, Mich.

The following nonmetallic mineral mines and companies also received certificates of honor:

Bauxite mine, Reynolds Mining Corp., Alexander, Ark.; mine and plant, Certain-Teed Products Corporation, Acme, Texas; mine and mill, Potash Company of America, Carlsbad, N. M.; Retsof mine, International Salt Company, Inc., Retsof, N. Y.; and fluorspar mine, Colorado Fuel and Iron Corp., Wagon Wheel Gap, Colo.



SUMMARY—The portland cement industry produced 13,751,000 barrels of finished cement in February, 1949, as reported to the U. S. Bureau of Mines. This figure represents an increase of 3 percent over the production reported for February, 1948. Mill shipments totaled 9,134,000 barrels, an increase of 10 percent over the February, 1948, figure, while stocks of 22,208,000 barrels on February 28 were 9 percent above the February, 1948, totals. Clinker output in February, 1949, amounted to 15,133,000 barrels, representing an increase of 5 percent over the corresponding month of the previous year.

PRODUCTION—The output of 13,751,000 barrels of finished cement in February, 1949, came from 144 plants located in 35 states and Puerto Rico. In the same month last year 13,347,000 barrels were produced in 143 plants. Clinker production increased 5 percent over the February, 1948, figures.

SHIPMENTS—Mill shipments of 9,134,000 barrels amounted to 10 percent more than those reported for February, 1948. The demand for cement in February, 1949, as indicated by mill shipments, increased over that of the previous month (January, 1949)—8,756,000 barrels. Shipments were higher in 16 districts and lower in 3, than those reported in February, 1948. The changes range from a decrease of 38 percent in the Oregon and Washington district to an increase of 65 percent in the western Missouri, Nebraska, Oklahoma, and Arkansas district. An increase of 11 percent is also indicated for the Puerto Rican district for February, 1949.

STOCKS—Stocks of 22,208,000 barrels of finished cement on February 28 were 9 percent above the February, 1948, figure, while clinker stocks, as of the same date, amounted to 6,752,000 barrels—an increase of 30 percent.

1948 a Profitable Year For Canada Crushed Stone Co.

A record volume of business carried 1948 net profits of Canada Crushed Stone Co. to $170,115, as compared with $116,125 the previous year. On a share basis, net increased 1947's $1.82 per share to $2.67.

The year-end balance sheet reveals working capital at $552,890, as against $417,076 in 1947. And accounts receivable jumped to $140,792 from $103,212.

During the year $50,094 was spent on fixed assets, according to President Alan V. Young. "Present indications point to a satisfactory business in the coming season," he said.

"Mixed Trend" Apparent In Dodge Corp. Report On Jan.-April Contracts

F. W. Dodge Corporation reported that contracts awarded for buildings, public works and public utilities projects in the 37 states east of the Rocky Mountains in April amounted to $842,586,000, to show a 13 percent gain over March and a decline of 4 percent from April of last year.

Increased investment commitments were reported in commercial building, educational and science building, hospital and institutional building, social and recreational building, and single-family houses built to owners' orders for their own occupancy, last month's totals in these groups being higher than those for March and for April of last year. Awards for public works were also in the ascendency during the month.

At the month's end, the cumulative record for the year in all building and engineering classifications showed a total of $2,641,656,000, or 8 percent less than the total reported for the corresponding four months of last year.

The deficit for the first four months was brought about by an over-all decline in nonresidential contract commitments of 1 percent to a total of $1,087,589,000, a decline of 17 percent in residential awards to a total of $907,796,000, and a decrease in public works and public utilities awards of 3 percent to a total of $646,271,000.

During the first four months, many classifications were running at a rate higher than a year ago. Those showing gains and the percentage increase over the first four months of last year follow: educational and science, 5 percent; hospital and institutional, 3 percent; public buildings, 96 percent; religious buildings, 19 percent; social and recreational, 13 percent; dormitories, 57 percent; single-family houses built to owners' orders for their own occupancy, 14 percent.

Awards for building and engineering works for public account constituted 38 percent of the total of last month's contract volume, and also accounted for 38 percent of the first four months' total.

Increased Severance Taxes On Nonmetals Passed in N. M.

New or increased severance taxes on nonmetallic minerals have been proposed in at least five states this year, but with affirmative action resulting in only one instance.

A survey disclosed that by May 2 such measures had been enacted in New Mexico; killed in Utah, and were still pending in California, Florida and Ohio.

Although severance tax yields (especially those from levies on nonmetallic minerals) account for only a minor portion of total state revenues on a nationwide basis, they are of major importance in some states. Present indications are they will come in for greater attention from state lawmakers as the search for new state revenue sources broadens.

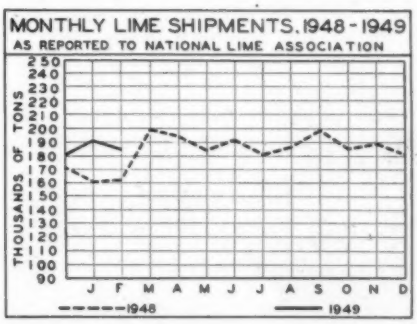
• Scene at International Minerals & Chemical Corporation's Mulberry, Fla., drying plant, where a Whitcomb 65-ton diesel locomotive hauls phosphate onto a wet storage trestle for dumping. The locomotive is an 0440 diesel-electric, equipped with two D-1700 "Caterpillar" engines and Westinghouse straight and automatic air brakes. About 400 carloads of phosphate are handled per day, involving considerable switching and hauling.

Types of Rock Described In Mines Bureau Publication

Characteristics of more than 100 rock types obtained from various operating mines and mineral-investigation projects are listed and described in a report recently made public by the U. S. Bureau of Mines.

The report includes a tabulation of 11 different physical properties for each type of rock tested, as well as the source and geologic classification of each. The detailed classification is designed to provide a means of making valid comparison with unknown rocks and data needed to evaluate the relative importance of various factors in actual mining and metallurgical practice. It includes sections describing the selection and preparation of the samples from separate quarries and mines, testing procedures, explanations of tests analyses, and an alphabetical index to rock types.

A free copy of Report of Investigations 4459, *Physical Properties of Mine Rock, Part I*, may be obtained by writing to the Publications Distribution Section of the U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.



According to date collected by the National Lime Association, 52 companies in February, 1949, shipped 185,002 tons of lime (123,595 quicklime; 61,407 hydrate). Reporting companies represent 60.2 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments for the month by all plants were approximately 338,000 tons. Shipments by uses and grades for February, 1949, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	1,094	10,840
Building	9,764	25,733
Chemical	112,737	24,834
Total	123,595	61,407

Three-in-One Kiln at Trujillo Once Served Lawrence Plant

Our April issue carried an item announcing plans of the Dominican Republic to develop its cement industry to the point of becoming ultimately independent of imports. An interesting sidelight on efforts in this direction appeared in the April 15 issue of the Lawrence Portland Cement Company's publication *The Lawrence Dragon*.

According to the caption accompanying an aerial view of the government-owned and operated plant on the Ozama River near Ciudad Trujillo, one of the kilns once formed three parts of a Lawrence plant. For this installation three kilns from the Northampton (Pa.) plant, purchased from Lawrence some time ago by the Dominican Republic were joined together to make one long kiln.

W.A.A. Approves Transfer Of War Plant to U. of Texas

The War Assets Administration has approved the transfer of the government-owned surplus International Minerals and Chemicals Corporation plant at Austin, Tex., which manufactured raw magnesium bar stock during the last war, to the University of Texas.

The property will be conveyed to the University at 100 percent public benefit allowance. Its present established fair value is $1,475,936. Included in the transfer are about 393 acres of land and 28 buildings of permanent and semi-permanent type. The government reserves the right for full and unrestricted use of the property in the event of a national emergency.

Calaveras Cement Official Predicts Profitable Year In '49 Despite Uncertainty

Continued good business for the cement industry is forecast in the annual report of Calaveras Cement Company, recently released.

"In this period of rapid changes," President William Wallace Mein told company stockholders, "it is very difficult to forecast business conditions for 1949. It is the expectation of the management, however, that the large number of deferred public works projects should provide a sizable demand for cement when added to the private construction scheduled for the year ahead."

Beneficial effects of a four-year expansion program which is still in progress were revealed in the company's report. An 80 percent increase in plant capacity, together with continued high demand for cement products, boosted Calaveras sales to $4,264,060 in 1948, as against $2,962,700 in 1947.

Last July's Supreme Court decisions in the Cement Institute Case caused a shift in company sales policies during 1948, it was disclosed.

As a result of the Supreme Court action, the company abandoned its long-standing practice of absorbing freight charges to all destinations in northern California, and is now selling all its cement at mill price plus actual freight charges to destination.

A new Calaveras plastic cement will be introduced and marketed throughout most of northern California during 1949, the company announced.

British Labor Party Plans To Nationalize Cement Trade

An announcement in the *Wall Street Journal* (April 13) evoked no little interest among members of the American lime industry. According to the item, the British Labor Party declares that it will nationalize five more industries if it is victorious in the 1950 election—among them the cement industries and "all suitable minerals." Coal has already been nationalized.

"Business as Usual" the Rule At Lehigh's Iola, Kan., Plant

Lehigh Portland Cement Company recently resumed operation of its plant, Iola, Kan., after completing temporary repairs necessitated by fire damage. A blaze on April 15 put the firm's power plant out of commission.

Temporary shelters were erected over six large diesel engines to protect them until the permanent roof was restored. A large crane which prevented sections of the roof from falling on the motors during the fire was sent to Kansas City for repairs.

Dismantling of Dresser Plant Begun by Trap Rock Company

North of Dresser, Wis., dismantling of the Trap Rock Company's plant is under way after 35 years of operation. The announcement of the decision of officials to discontinue quarrying and crushing rock at Dresser was made by Jules Larson, manager. According to Mr. Larson, the rock is so difficult and expensive to mine that the company executives consider further operation of the facilities unprofitable in the face of competitors' prices.

The deposit is said to be the oldest-known outcropping of the igneous rock, described as being harder than granite and of pre-glacial, volcanic origin.

The Trap Rock Company, whose headquarters are in Minneapolis, began operations at Dresser in 1914. All buildings will be completely dismantled and the machinery and equipment will be sold. Officials estimate that dismantling will require a year.

This on-the-job shot shows a 28FD Euclid truck with rear-dump quarry body being loaded at the Volunteer Portland Cement Company's quarry near Knoxville, Tenn. A 2-cu. yd. shovel loads 15 to 18 tons of cement rock into the truck for the haul to the crusher. The 28FD is powered by a 150-hp. engine; has dual tires in the rear.

Bert L. Swett Dies— Former Lehigh Executive Served Industry 40 Years

Bert L. Swett, veteran member of the Lehigh Portland Cement Company's sales organization, who retired from active service on January 1 of this year, died of a heart attack on May 14.

Mr. Swett began his career in the cement industry at the age of 17 when he became an office boy in the New York office of the Atlas Portland Cement Company. In 1908 he joined the Lehigh Portland Cement Co., and four years later was appointed Eastern sales manager. The post of vice-president and general sales manager was assigned to him in 1926. In this capacity he served the firm until his retirement, at his headquarters in New York City.

Recognition was accorded him throughout the industry; and his own company recently paid him a high tribute as "one of the ablest sales executives in the cement industry" who had "contributed more than any other man to the sales success of the company."

Permalite Processing Plant Scheduled to Open in July

The Great Lakes Carbon Corporation has announced that it expects its large modern Permalite processing plant in Linden, N. J., to be in operation early in July. T. C. Carter, corporation vice-president and general manager of its Building Products Division, estimates that the daily output of the new plant will be about 75 tons of the lightweight plaster and concrete aggregate.

Until now the only source of the corporation's lightweight aggregate has been the processing plant in Torrance, Calif., which has supplied major commercial building and home construction in the Los Angeles, San Francisco, Chicago and Houston areas for the past two years.

The plant at Linden will consist of a 70- by 165-ft. main building, an addition 20- by 100-ft., and the kiln, crude storage bins and silos. Production of the new plant will furnish enough plaster aggregate each day for 65,000 square yards of plastered walls in homes, office buildings and commercial structures along the Eastern seaboard.

Ohio Road Official Finds '49 Highway Job Bids Lower

"The trend is definitely down in cost of road building in Ohio," State Highway Director T. J. Kauer declared recently after reviewing bids received by the department on 105 road jobs let to contractors so far in 1949.

Mr. Kauer explained that materials and labor were becoming in greater supply.

He pointed out that department engineers estimated cost on the 105 jobs at $6,155,000; but bids totalled only $5,644,000, a saving of $511,000.

Industrial Plant Expansion Rate Reflects Curtailment Of Construction Volume

A decline in the rate of industrial plant expansion in the 37 states east of the Rocky Mountains during the first quarter of the year was reported today by the F. W. Dodge Corporation.

Contracts for manufacturing buildings awarded in the Eastern sections of the United States aggregate $147,605,000 in the first three months, to reflect a 19 percent drop from the total of $181,240,000 reported for the corresponding period of last year. The figures do not include machinery or equipment used in manufacturing.

The decline was attributable to sharp drops in the rate of awards by the chemical, food products, and textile processing groups, and by declines in the iron and steel, lumber and woodworking mechanical groups. All other major processing and mechanical industries showed increases in building contracts awarded.

Fluorspar Industry Honored As Area's "Industrial Backbone"

Something new in publicity and civic responsibility made the headlines recently in Salem, Ky., when the community's fluorspar mining industry was featured at a banquet. Described as "the backbone of Salem's industrial life," fluorspar operations of the area were honored by the 75 officials of mining corporations, independent companies and members of the local Lions Club.

Representatives of the following firms were in attendance: Inland Steel Corp., Alcoa Mining Co., Ozark Mahoning Co., Rosiclare Fluorspar and Mining Co., Kentucky Fluorspar Mining Co., Pennsylvania Salt Manufacturing Co., Delhi Fluorspar Co., and Frazer Mining Co.

Special honors were accorded to F. B. Moodie Sr., who retired after 34 years in the fluorspar business, and Avery Reed Sr., engineer and geologist of 48 years' service.

Schundler & Co. Processing Nevada Perlite at Joliet, Ill.

F. E. Schundler & Co., producer of a wide variety of processed nonmetallic minerals at its plant in Joliet, Ill., has added expanded perlite to its line.

Raw material is being shipped from a deposit in the Seven Troughs area near Lovelock, Nev., held under purchase option by the Schundler interests. The raw perlite is being crushed and shipped from the Nevada property by Henry Schwabrow and Marian Schendel.

International Minerals Corp. Opens Big Potash Plant

At Carlsbad, N. M., International Minerals & Chemical Corporation's new $1,500,000 potash refinery has been opened adjacent to the older plant of the firm.

Capacity is expected to be more than 20,000 tons annually when full production is attained. A. N. Into, vice-president of International's potash division, stated that the plant had been built to meet a greater demand for high-grade potassium chloride. Potassum sulphate of a higher grade will also be made at the plant.

• One company that believes in capitalizing upon honors awarded for safety is the Ash Grove Lime & Portland Cement Company, Kansas City, Mo. Pictured above is the safety memorial erected by the firm upon the premises of its Galloway plant, near Springfield, Mo., in honor of the 1948 safety record achieved by Galloway workers. This plant was recently awarded a certificate of honor in the U. S. Bureau of Mines Safety Competition for having hung up an accident-free safety record for the year. Space was left below the trophy plaque for future date inscriptions.

Metz Aggregate Co. Open New Sand and Gravel Plant

Equipment of the Metz Aggregate Company has been installed at Metz, Calif., and operations were scheduled to begin at the big gravel plant on June 1.

John Porter, president of the firm, stated that 15 carloads of aggregates will be handled per day on the 2500-ft. railroad spur. Sand and gravel will be taken from the Chalone Creek bed, which was tested and found to meet state specifications of a high standard.

Consolidated Rock Products Sales Top $14,000,000 in '48

Net income of Consolidated Rock Products Company for the year ended December 31, 1948, amounted to $758,179, as compared with $676,867 for the preceding year, according to the annual report to stockholders. Sales for the year totaled $14,258,172, as compared with $12,619,441 for the preceding year.

According to President Robert Mitchell, increased sales and earnings permitted plant rehabilitation and replacement of worn out and obsolete equipment. A total of $160,000 of bonds were retired, leaving $2,250,500 outstanding at the end of the year.

$47,000,000,000 Needed For Road Rehabilitation A. R. B. A. Official Declares

Expenditure of $47,000,000,000 over a ten-year period at a rate double that of the dollar-record 1948 pace will be required to enable America's deficient roads to meet the nation's highway transportation needs, J. S. Bright, Washington, D. C., deputy commissioner of the Public Roads Administration, told the American Road Builders' Association recently at Savannah, Ga.

The estimate is based on state-wide highway surveys in which "experienced engineers determined the deficiencies by a mile-by-mile appraisal of each road and street, using standards or yardsticks of measurement approved by state, county and city engineering committees," Mr. Bright declared. He emphasized also that the surveys were made "at the request of state legislatures or the executive departments of state governments." He spoke on the closing day of the three-day Southeastern States Conference, sponsored by the American Road Builders' Association.

Wyoming Exempts Cement From Freight Increase

Cement shipments were exempted from a 4 percent interim increase in intrastate rail freight rates authorized on April 1 by the Wyoming Public Service Commission.

Spokesmen for the cement industry had pointed out to the Wyoming commission that increases authorized in Colorado did not include cement shipments. They warned that a higher Wyoming rate schedule would work a competitive disadvantage against the Monolith Cement Corporation's plant at Laramie.

The new Wyoming intrastate rail rates on most other commodities were approved to bring them in line with interstate rates recently authorized by the Interstate Commerce Commission.

$50,532,000 Road Program Outlined for Virginia

The Virginia State Highway Commission has outlined a $50,532,000 road construction and maintenance program for the fiscal year beginning July 1, 1949.

The commission has allocated $22,042,000 to specific construction projects on Virginia's 9,000-mile primary highway system and $20,990,000 for construction and maintenance on the state's 38,500-mile secondary system of farm-to-market and connecting routes. An additional $7,500,000 has been allocated to maintenance work on the primary highway system.

Hopes for a 130-mile, $210,000,000 conveyor belt line to connect Lake Erie and the Ohio River faded as the Ohio House of Representatives commerce and transportation committee voted 12 to 4 to kill the "rubber railroad" bill by indefinite postponement.

Mexican Cement Firm Announces Completion Of Wet Process Plant

La Tolteca, Compania de Cemento Portland, S. A., recently completed the construction of a new wet process plant alongside the old dry process plant which has been in operation for the last 35 years. The new plant will have an initial capacity of 750 metric tons per day.

The limestone quarry has been fully mechanized, and first- and second-stage crushing will be carried out at the quarry. Limestone of 1½-in. ring size will be transported by Euclid bottom-dump trucks to the third-stage crushers at the plant, where it will be further reduced to ½-in.

The clay will be dug and conveyed with Sauerman scraping equipment to a washmill and pumped with about 70 percent water to a clay slurry tank.

The clay slurry and the crushed limestone will be ground by two 800-hp. multi-compartment mills, and the slurry corrected in three correction tanks will be deposited into storage tanks. From there it is to be pumped to the feeders of two Vickers-Armstrong oil-fired rotary kilns provided with Fuller coolers. The finished grinding is carried out by two 800-hp. multi-compartment mills in open circuit. The cement is transported by a long belt conveyor to the existing silos of the old plant.

An outstanding feature of the new plant is the extensive use of belt conveyors and the simplicity of the whole installation to save labor.

Drilling was started in the limestone quarry on April 21, and it is expected that full production will be reached in the immediate future.

24 U.S. Gypsum Employees Complete First Aid Course

That safety continues to be front-page news among United States Gypsum Company employees is attested to by the word that 24 foremen, supervisors and others on the firm's Jersey City staff recently completed the Red Cross standard First Aid training course.

According to Edward O. Gerkin, works manager, one of the most valuable results of the course was to make the men safety-conscious. The local Red Cross chapter furnished the instructor and materials for the course, which was held during working time as a part of the U. S. Gypsum's job-training program.

Brazil's Congress Authorizes Duty-Free Cement Imports

Under the terms of new legislation enacted by the congress of Brazil, the importation of portland cement duty-free has been authorized for 1949 and 1950. The new law supplants an act requiring importers to post a bond in place of paying duties. These bonds will now be returned, since the new law is retroactive to 1948.

The new law sets limits on the commission which agents and representatives may receive, as well as the profit which can be realized by those who import for resale.

New Digger Replaces Veteran At Basic Refractories Quarry

Modernization of equipment at the quarry of Basic Refractories, Inc., at Maple Grove, O., called for the replacement of a 24-year-old shovel. Installed to carry on the work of the veteran is a late model of a Bucyrus-Erie 120-B shovel, equipped with a 4½-cu. yd. dipper.

According to *Basic Blast*, the firm's house organ, it required five freight cars to transport the big shovel from Harrisburg, Pa., to the quarry.

Kentucky Highway Dept. Plans $48,000,000 Program

John A. Keck, commissioner of the Kentucky State Highway Department, has reported a budget of $48,798,000 for road building and maintenance for the state during the fiscal year beginning April 1, 1949.

The program involves 126 projects covering 500 miles of roads in 53 counties, for which contracts were let on April 23.

Dr. and Mrs. W. H. Dow Killed in Airplane Crash Fatal to Three Others

Dr. Willard H. Dow, president and general manager of the Dow Chemical Company, Mrs. Dow, and three other persons lost their lives in an airplane crash on March 31 near London, Ont., Canada.

With Dr. and Mrs. Dow were Calvin A. Campbell, Dow secretary and general counsel, and Mrs. Campbell. The latter and the plane's pilot and co-pilot were also killed, Mr. Campbell being the only survivor of the crash.

Since 1930, upon the death of his father, Dr. Herbert H. Dow, founder of the Dow Company, Dr. Dow has assumed the duties of guiding the growing business which now numbers 15,000 employees on its payroll. Previously he had been serving in various capacities, becoming a director in 1922 and assistant general manager in 1926. He received his training as a chemical engineer at the University of Michigan. Dr. Dow was 52 years of age.

According to the annual report of the Scanian Cement Company of Sweden, Swedish cement exports have been resumed for the first time since World War II.

Highway Construction Survey Shows 1949 Will Hit New High

The upward trend in postwar highway construction will continue in 1949 with an estimated expenditure of $1,233,546,000 on state and federal aid roads, as compared to $1,111,600,000 and 33,657 miles in 1948 and $846,153,000 and 30,279 miles in 1947, a state-by-state survey just completed by the American Road Builders' Association discloses.

"Maintenance, also mounting steadily, is not included in these estimates," explained Dan R. Lamson, A.R.B.A.'s research engineer. "Our figures show $433,603,000 for maintenance in 1949, as against $415,126,000 for 1948 and $377,181,000 for 1947."

The survey breaks down the mileage as 1,526 miles of concrete, 19,716 miles of bituminous mixes and treated types, and 10,788 miles of other forms of surfacing.

Combined construction and maintenance expenditures for 1949 of $1,667,149,000 for the second successive year constitutes a new all-time high in American road building history.

Estimated 1949 Highway Costs*

*Numbers at left of each column show order of states.

	States	Total Expenditures		States	Total Mileage, 1949		States	Total Expenditures		States	Total Mileage, 1949
31	Ala.	$ 19,000,000	14	Ala.	750	49	Nev.	4,250,000	39	Nev.	177
45	Ariz.	8,750,000	40	Ariz.	175	33	N. H.	18,834,000	44	N. H.	80
30	Ark.	19,500,000	34	Ark.	350	15	N. J.	37,200,000	49	N. J.	25
4	Calif.	89,853,000	27	Calif.	527	27	N. M.	22,000,000	18	N. M.	700
34	Col.	18,756,000	30	Col.	450	1	N. Y.	166,000,000	24	N. Y.	600
24	Conn.	25,379,000	46	Conn.	51	6	N. C.	72,000,000	2	N. C.	3,125
47	Del.	6,400,000	43	Del.	83	36	N. D.	14,500,000	21	N. D.	640
19	Fla.	31,500,000	28	Fla.	505	5	Ohio	77,000,000	10	Ohio	875
8	Ga.	54,000,000	8	Ga.	960	23	Okla.	25,759,000	7	Okla.	1,002
39	Idaho	13,351,000	33	Idaho	371	20	Oreg.	30,500,000	36	Oreg.	315
7	Ill.	56,010,000	16	Ill.	721	2	Penn.	103,500,000	5	Penn.	1,225
16	Ind.	35,718,000	25	Ind.	530	43	R. I.	9,600,000	48	R. I.	30
28	Iowa	21,830,000	11	Iowa	825	26	S. C.	23,020,000	15	S. C.	730
17	Kan.	33,000,000	3	Kan.	2,500	37	S. D.	13,900,000	20	S. D.	670
22	Ky.	28,000,000	6	Ky.	1,150	29	Tenn.	20,059,000	23	Tenn.	631
12	La.	45,660,000	17	La.	721	3	Texas	96,000,000	1	Texas	4,250
35	Maine	16,250,000	39	Maine	220	44	Utah	9,500,000	32	Utah	385
40	Md.	12,791,000	35	Md.	347	48	Vt.	6,000,000	42	Vt.	89
14	Mass.	37,979,000	45	Mass.	79	9	Va.	52,000,000	29	Va.	495
11	Mich.	50,300,000	19	Mich.	675	25	Wash.	24,500,000	9	Wash.	899
21	Minn.	30,000,000	13	Minn.	795	18	W. Va.	33,000,000	41	W. Va.	106
32	Miss.	19,000,000	22	Miss.	640	10	Wis.	51,000,000	12	Wis.	800
13	Mo.	40,800,000	4	Mo.	1,837	42	Wyo.	11,000,000	37	Wyo.	250
46	Mont.	7,200,000	26	Mont.	568	41	D. C.	11,500,000	47	D. C.	44
38	Neb.	13,500,000	31	Neb.	422		Total	$1,667,149,000		Total Mileage	34,395

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE June, 1919, issue of PIT AND QUARRY was to a large extent devoted to the lime and agricultural limestone industries, although not designated as a special issue. The lead article was on lengthening the season for agricultural lime, a problem which has since been lessened but not solved. It was pointed out that some producers had found it economically feasible to provide sufficient storage so that production could be distributed over a longer period than the few months when the farmer ordinarily buys. It was also suggested that the farmer might be educated to spread out his buying and perhaps even his use of lime over a longer period of time. This, however, would require furnishing the lime in sacks, a development which had apparently not yet become popular but which, it was pointed out, was economically feasible as the cost of sacking would be offset by the lower production costs possible with a longer operating season. It was suggested, not very hopefully, that dealers, and even railroads, might find it to their advantage to provide storage facilities at advantageous points.

The new agricultural limestone plant of the Marble Cliff Quarries Co. near Columbus, Ohio, was described as being the last word in such operations. In addition to agstone this plant also produced three sizes of chicken grits and various pulverized products. A feature was the Cummer rotary dryer which was installed to get the maximum capacity from the crushers and screens. Jeffrey swing-hammer pulverizers were used and pulverized products were bagged by a 2-spout Bates packer.

This issue told how the Woodville Lime Products Co., Woodville, Ohio, built a new crushed stone plant partly to balance up the working time in the quarry with that in the plants and also to provide the stone for the lime kilns. The company's lime plant was already one of the largest, with over 40 shaft kilns, four 3½-ton Clyde hydrators and seven Bates valve baggers. The new crushed stone plant produced from 60 to 70 cars of stone per day. It had a 48- by 60-in. Superior jaw crusher located 40 ft. below the quarry floor. Revolving scalping and sizing screens were used and secondary crushing was done by 32- by 72-in. Garfield rolls. A Symons disc crusher was used for further reduction. The plant was built entirely of concrete and steel, with corrugated metal siding.

One of the feature articles was the complete description of the new Mackinaw and Pekin, Ill., sand and gravel plants of the McGrath Sand & Gravel Co. These were, except in minor details, twin plants, as the owners believed such duplication simplified all phases of operation. With one row of conical screens each plant had a capacity of about 20 carloads per day, and space was left for the installation of a second row of screens to double the capacity when desired. The design of the plants was made by Raymond W. Dull, who had recently become associated with the Link-Belt Co. These were the first of many almost identical plants throughout the industry. Each had three Link-Belt Dull inclined conical washing screens and two 72-in. conical sand separators over the wooden storage bins. A Sauerman 1½-cu. yd. cableway excavator supplied material from the pit.

Association affairs included the program of the Lime Association convention, scheduled to be held at the William Penn Hotel, Pittsburgh, June 18 and 19. It was promised that there would be on exhibition an air-tight container which would solve the problem of shipping chemical lump lime without deterioration. There was also the announcement that the association would on July 1 open a district office in Chicago. A group of Southeastern producers of agricultural limestone and lime met in Knoxville, Tenn., and drew up a series of resolutions on the lime needs of the Southeastern states. These covered such subjects as suitable raw materials, fineness of grinding, quantity and frequency of application, time of application, liming and crop rotation, lime and fertilizers. The recommendations made duplicate to a surprising extent the practices favored today after many years of research. Producers today, however, do not agree with the stand of some producers at this meeting that the advantages of agricultural lime was so well known that no selling was needed.

Final figures on portland cement for 1918 showed that shipments amounted to 70,915,508 bbls., valued at $113,153.513, a decrease of 21.8 and 7.8 percent, respectively, from 1917. Production of 71,081,663 bbls. was down 23.4 percent, and amounted to 54 percent of capacity. It is interesting to note that factory prices averaged $1.596 per bbl., ranging from $1.511 in Pennsylvania to $1.894 in Washington. Two new plants went into operation in 1918—the Old Mission at San Juan de Bautista, Calif., and Three Forks at Hanover, Mont. A total of 114 plants produced portland cement during the year, and six were idle.

The many shorter articles and news items covered such subjects as the following: drilling and blasting seamy deposits; the growth of the phosphate industry in Tennessee; increased cement output in Argentina; application of the 10-cent rail rate reduction on road-building materials; use of diesel engines in gravel plants; concrete mix design methods of Prof. Duff A. Abrams, then of Lewis Institute; selection of the proper size crusher; possibility of increased production of artificial aggregates; formation of the Cement Export Co., Inc., etc.

Perlite Institute Formed At Meeting in Los Angeles

The rapidly-growing perlite industry took a big step forward in the lightweight aggregates field on May 12, 1949, when the Perlite Institute was formed at a meeting held at the Biltmore Hotel, Los Angeles, Calif. This is an industry trade association open for membership to all perlite ore producers and expanders in the United States and Canada. Its purpose is the same as that of other such trade associations, to advance in every way the interests of its members and the use of their product. A full-time salaried executive secretary will be appointed in the near future and headquarters will be located in New York City.

At this first meeting 45 men were present, representing 18 of the leading perlite producers and expanders. Officers and a board of directors were elected. The officers are as follows: president, T. C. Carter (vice-president, Great Lakes Carbon Corp., Los Angeles, Calif.); vice-president, J. Don Alexander (president, Alexander Film Co., and Alexite Engineering Co., Colorado Springs, Colo.). Both of these men are two-year directors. The other directors include the following: C. H. Hall (president, Standard Perlite Co., Pasadena, Calif.); Oliver N. Gregg (president, Gregg Lumber Co., Grand Rapids, Mich.); and Thomas W. Dant (president, Gregg Lumber Co., Grand Rapids, Mich.); and Thomas W. Dant (president, Dant & Russell Co., Portland, Ore.).

At this meeting a constitution and by-laws were adopted. Most of the meeting was devoted to discussion of plans for the future of the association and the industry. There was also some discussion on the standardization of plaster aggregate sizes, and a committee was appointed which will work with the National Bureau of Standards, the American Standards Assn., etc.

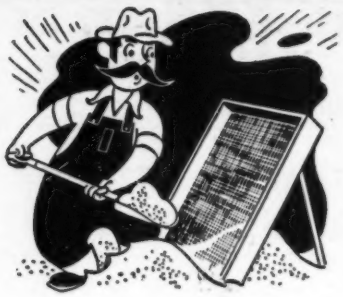
The next meeting of the Perlite Institute will be held on September 7, 8 and 9, 1949, at the Antlers Hotel, Colorado Springs, Colo. All producers and expanders of perlite are invited to attend.

Oregon Quarrying Operation Expected to Double Output

Croisan Quarries, which began operations last year near Salem, Ore., is rushing blasting and crushing of rock to meet a record demand for rock in road and street work.

George Lund Sr. and R. E. Lee, proprietors, predict that production this year would double the 1948 output. They expect to process 100,000 cubic yards of rock in 1949. The entire output of the plant goes to Salem area construction projects.

Screenings



by William M. Avery

IN case you've felt, as we have lately, that there just aren't enough hours in the day, you may extract a morsel of comfort from the disclosure that the Bureau of Standards has developed an atomic clock which will eventually lengthen the day to 25 hours.

By utilizing the constant vibrations of the atoms in ammonia molecules (don't ask us how!), scientists think they have developed a method of keeping time that is considerably more accurate than the rotation of the earth, which seems to vary from day to day by as much as one part

in 20 or 30 million. If the atom clock, which promises accuracy to one part in 100 million, becomes the official time keeper, the bright lads have figured out that the length of the day will increase gradually as the rotation of the earth slows down, which it appears to be doing at the breathtaking rate of two-thousandths of a second per century.

Don't throw away your present clocks for a while. That 25-hour day will take about 180,000,000 years to get here. By that time there might even be a Republican Administration in Washington, and we're pretty confident they'd repeal the whole business.

Versatile Sand

SAND is finding its way into lots of places besides restaurant spinach these days. The extra bounce in a new golf ball developed recently was achieved not with rubber but with a material made from sand. Chemists are now able to

make new perfumes, flavors and dyes from silicon in common sand, and the aircraft industry is reported to be using blankets of sand to protect both planes and personnel from the high temperatures of jet-plane exhausts.

The gritty stuff, in the form of silica gel, has even invaded the beauty industry in a hat-like home hair dryer for women. If the trend continues, maybe the price of sand will go so high that spinach growers won't be able to afford to sprinkle it so liberally on their product.

No Bull

THE ingenious British have started marketing a new small tractor called the Calfdozer. Would-be American imitators are advised not to waste time trying to cross-breed their bulldozers with cows. Seems that isn't the way it's done.

Explanation

A RECENT issue of *This Earth* mentions that one of the ingredients in the *retarders* used at Standard Gypsum's Long Beach plant is ground horses' hooves. We've always nursed a dark suspicion that the nags we bet on from time to time carried their own retarders, and this seems to confirm it.

Private Initiative

WE'VE been reading about a fellow in Newark who clearly is in line for honorary life membership in the National Crushed Stone Assn. Seems he ran into a bit of a boulder when he started excavating for the foundation of his new home. The deeper he dug, the bigger the boulder got. When he reached the base, the thing was found to measure 22 ft. across, and 19 ft. in depth. Its estimated weight: 600,000 lbs.

Blasting men said it would cost $500 to break it up, several hundred more to haul it away. "Nuts to that," said our hero. "Do the job m'self."

He dug a wide trench around the boulder to accommodate large logs, then started a series of fires. As fissures opened in the granite, he poured water into them, causing pieces of varying sizes to break away.

When the job was completed (it took 14 months) he found he had more stone than he could possibly use in the modest 5-room bungalow he had planned to build. So he built a 9-room mansion with 2 baths,

and faced the entire exterior with the products of his labor.

Well, we're glad it was a boulder he ran into and not the outcropping of a major deposit. In the latter case our friend's single-track mind would probably have kept him going until he had a home the size of the Metropolitan Museum.

WASHINGTON NEWS LETTER

WASHINGTON is beginning to become convinced that "the bloom is off the boom." While it still isn't fashionable in these parts to talk about depression, recession or even deflation, discussions of the problems of inflation seem to have disappeared. Washington has changed a great deal since the halcyon days of the New Deal, but it hasn't lost its knack of coining a new word to describe an otherwise unattractive situation. For the new term describing the current economic developments, thanks must be delivered to Dr. Edwin G. Nourse, Chairman of the President's Council of Economic Advisors. He calls it "disinflation."

Shoring up of the economic structure in the face of declining sales and prices has already begun. Twice in about a month the Board of Governors of the Federal Reserve System has loosened up its restrictions on consumer credit. Easing of margin requirements for stock purchases was also directed to the same objective. The days of "no down payment and so much a month the rest of your life" appear to be returning. To many around Washington who remember or have studied the easy credit days of the late 1920's these developments have a familiar and somewhat eerie ring. Much of the blame for the 1929 crash was placed on the easy credit conditions, particularly in the stock market, which preceded it. Many a business man and economist explained the rapid business decline and the lengthy depression which followed in terms of the overextended credit position in which both business and consumers found themselves. Being deeply in debt, consumers could not finance themselves through even a temporary period of unemployment. Similarly, business and stock market traders could not withstand any adversity without being forced into a major liquidation. While some easing of credit restrictions is undoubtedly desirable in periods such as we are now experiencing, thoughtful government officials are concerned about how far this should be permitted to go before the cure becomes more serious than the disease.

By S. HERBERT UNTERBERGER

Pit and Quarry Situation

The pit and quarry industries are so closely interrelated with the total construction industry that their fates cannot be separated. Available reports appear to demonstrate that although the construction industry has experienced a substantial internal rearrangement, it has not as yet suffered a decline in output. According to data prepared by the U. S. Department of Commerce, the value of total construction put in place during the first three months of 1948 was as follows:

January, 1948	$1,180,000,000
February, 1948	1,149,000,000
March, 1948	1,226,000,000
Total 1st quarter	$3,555,000,000

The value of construction put in place in the first three months of 1949 was 4% greater:

January, 1949	$1,221,000,000
February, 1949	1,192,000,000
March, 1949	1,295,000,000
Total 1st quarter	$3,708,000,000

It is important to recognize, however, that this increase is not found in every kind of construction. The value of private construction put in place the first three months of this year is well below that of the same period last year, as follows:

	1948	1949
January	$ 974,000,000	$ 934,000,000
February	875,000,000	838,000,000
March	1,001,000,000	881,000,000
Total 1st quarter	$2,850,000,000	$2,653,000,000

The value of private construction was lower each month this year than last and for the first quarter as a whole it was 7% lower.

On the other hand, public construction is running substantially above last year—by 19 percent:

	1948	1949
January	$ 206,000,000	$ 287,000,000
February	174,000,000	254,000,000
March	225,000,000	314,000,000
Total 1st quarter	$ 605,000,000	$ 855,000,000

Members of the pit and quarry industries whose products go principally into private construction are no doubt feeling the pinch, while those whose products go principally into public construction continue in a relatively fortunate position.

From this point of view, producers of certain basic building materials find themselves in a desirable situation. They are often the beneficiaries of public or government expenditures which generally are less erratic than private expenditures for construction. Furthermore, when government programs for fighting depression are discussed, they very often run in terms of expanded public works—roads, schools, airports, etc. There is in Washington general agreement that there should be an expanded public works program available to take up the slack when private production falls off. For many years there has been discussion of the need for a so-called shelf of public works plans, so that when the time arrives they can be taken off the shelf and, with a little modernization, be put into action promptly.

Unfortunately, not too much has been done about developing these projects, but there is much study and consideration of the subject right now. Progress along this line will be reported in subsequent newsletters.

General Industry Prospects

There is no doubt that business men are concerned about the economic outlook, but when the Securities and Exchange Commission pinned them down and asked them specifically what they expected their 1949 sales to be and what they planned to spend for new plant and equipment, their numerical answers revealed far less pessimism than their conversation. The results of the S.E.C. survey showed that with respect to sales: manufacturing expected a 0.7 percent decline from 1948; mining expected 2.6 percent decline from 1948; electric and gas utilities expected a 3.7 percent increase over 1948; transportation other than railroads expected a .2 percent decline from 1948; trade expected a .2 percent decline from 1948; and service, finance and communications expected a 1.1 percent increase over 1948.

(*Continued on page* 78)

ton warp and nylon woof for extreme strength. The bottom cover is 1/16-in. rubber. Total thickness is ¾ in.; the width 36 in. The 922 roll assemblies were supplied by the Conveyor Company, Los Angeles; they include 692 regular, rubber-rimmed and self-aligning troughing rolls and 230 regular and self-aligning return rolls.

Operating close to the horizontal on its entire run, the 2,350-ft. conveyor inclines upward for about 25 ft. on the last 250 ft. at the head pulley, where it acts as a stacker to build the surge pile serving the plant. A steel tower set 73 ft. back from the peak of the pile supports the truss end and also houses the conveyor drive. This consists of a 200-h.p. General Electric slip-ring motor operating direct from the plant's 4,000-volt distribution line through a G.E. 7491-Y1 controller. The motor drives through a Western Gear 39.75:1 ratio reducer with a flexible coupling between. Push buttons to stop the conveyor, and an intercommunication system, with outlets at strategic points along the run, allow perfect control of the raw-material supply at all times.

As now installed, the drop from the head pulley to the surge tunnel is 110 ft., giving the pile an enlarged capacity equivalent to a three-day live storage supply for the processing plant. Should pit operations be halted for a period longer than this, bulldozers could work the pile and keep the plant supplied for a full week without dependence on the pit. To handle the increased surge capacity, the reclaiming tunnel was lengthened and a 1,000-t.p.h. Jeffrey electric vibrating feeder was installed to feed the belt which runs up to the new scalping-and-crushing building. The belt was regraded at the head pulley at the same time to gain the additional height required by the new building and to permit production to continue during the changeover.

New all-steel structures house the new scalping, crushing, and primary-screening equipment. The old revolving bull screens were replaced by a pair of Tyler Ty-Rock Type F-800, 6- by 12-ft. double-deck scalpers which handle the split discharge coming off the conveyor from the surge pile. Incidentally, installation of the big electric-vibrating feeder in the surge tunnel is given considerable credit by the management for the uniformly high output maintained at the Irwindale plant. It assures a constant, maximum load to the screens and crushers at all times, without lapses or surges, and allows the processing components to function at peak efficiency with remarkable regularity.

Plus 3-in. material retained on the top decks of the twin scalping screens, together with any or all the plus 1½-in. rock coming off the lower decks, is passed to the bank of crushers below, while the throughs go on to the "mill" building for processing as washed gravel and sand. If desired, material up to 3 in. in size can be processed as uncrushed gravel, but the normal top size of washed pebbles produced is 1½ in.

Crushing is now done by three Symons standard cones arranged in line on the ground floor of the new building. These include a 7-ft., a 5½-ft., and a 4-ft. unit mounted on heavy concrete bases. A fourth reduction unit, probably a 5½-ft. Symons short-head cone, is to be added later. The 7-ft. crusher takes the 3-in. material, the 5½-ft. unit the 1½-in., while the smaller cone handles returned screen rejects, the crushers being in closed circuit with a following bank of four preliminary sizing screens. These screens, too, are new and are housed in a separate structure adjoining the new crusher house and served by connecting conveyors. A 20-ton Bedford overhead crane simplifies maintenance and repair on the crushers, since some of the castings exceed 25 tons in weight. The crane was also used to install the crushers.

A completely enclosed oil room has been built beneath the crushers to house the lubricating pumps, oil drums, etc. A small compressor keeps the room under pressure to eliminate the possibility of any dust entering and contaminating the lubricants.

The four preliminary sizing crushed-rock screens mentioned are arranged in tandem on a continuous slope. They are Ty-Rock Type 600, 4- by 12-ft. units, double-decked, and make crushed product from minus 1½ in. on down to dust, the oversize being returned to the cones in the crusher building. A fifth screen is planned for installation later to produce a top-size rock which will normally go to the mill building. In addition to increasing crushing capacity, the new system is much more flexible than the old, which was in open circuit and necessitated the trucking of any oversize back for re-crushing.

Two inclined conveyors, one (36

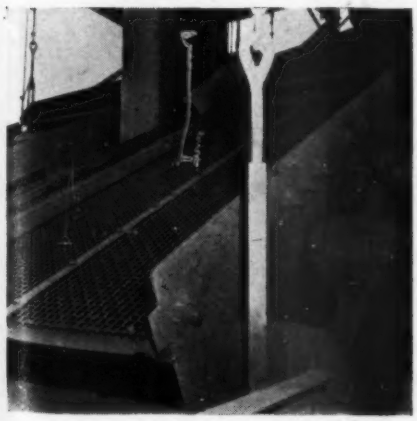
• **Left: A view along the 2,350-ft. endless belt conveyor connecting the pit and the plant.**
• **Below: The conveyor belt as it passes through one of the four tunnels enroute to the plant surge pile. It also passes under two sets of railroad tracks, a county highway and the plant road.**

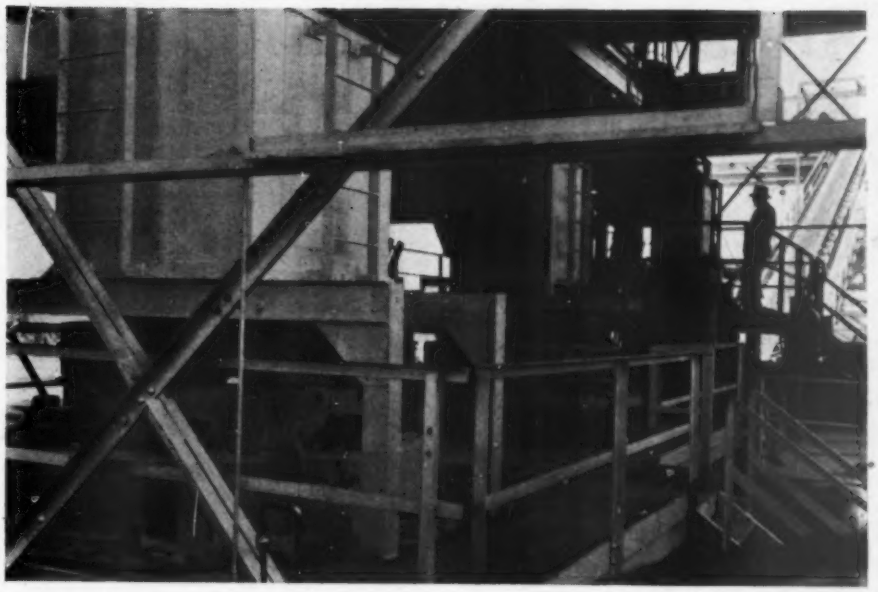
in. by 317 ft.) leading from the crushed-rock screens and carrying the combined crushed product; the other (36 in. by 313 ft.) carrying the sand-and-gravel throughs from the scalpers, deliver their separate loads to the mill building for final processing. A third conveyor, 30 in. by 320 ft., is now being installed paralleling the existing crushed-rock belt, to divide the load to the mill building.

Up to this point, all material is still dry, and the broken rock is subject to no further reduction during processing. The 100 percent crushed gravel is screened dry and stored separately in the east end of the mill building; gravel and sand are washed and screened in the west end of the building and stored in the bins at that end. This is in strict accord with southern California practice, which does not subject crushed material, principally because of its natural cleanliness, to the washing process at any stage.

The mill building above the reinforced-concrete loading bins is the next department slated by the management for rebuilding. On the crushed-rock side, a half dozen new Tyler Hum-mer vibrating screens will be added to enlarge screening capacity, while on the wet (sand-and-gravel) side, 4 Ty-Rock 4- by 12-ft. screens, and two Largo-type screens, the latter to be built in Consolidated's shops, are scheduled for early installation. Concrete and plaster sands, now produced by a pair of rake classifiers, will shortly be made in a set of three dewatering wheels. These wheels, 8 ft. in diameter and having a capacity of about 100 tons per hr. each, were developed by Consolidated. The initial installation was made recently at the company's Roscoe plant,

• Right: The new 6- by 12-ft. double-deck scalping screens which replaced the revolving bull screens.
• Below: The four new 4- by 12-ft. double-deck screens which make crushed product from minus 1½-in. Rejects return to the cone crusher in closed circuit.





• The newly-installed bank of three cone crushers. The dust-free oil room is immediately below.

where they are said to be doing a highly effective job of classification and dewatering.

Where oncoming material is divided for processing, as at the scalping, primary and sizing screens, Consolidated uses a special "splitter box" designed by company engineers. Flat steel divider sections in the boxes reduce abrasive wear to the minimum and division of the flow is controlled to a nicety by rack-and-pinion regulator wheels.

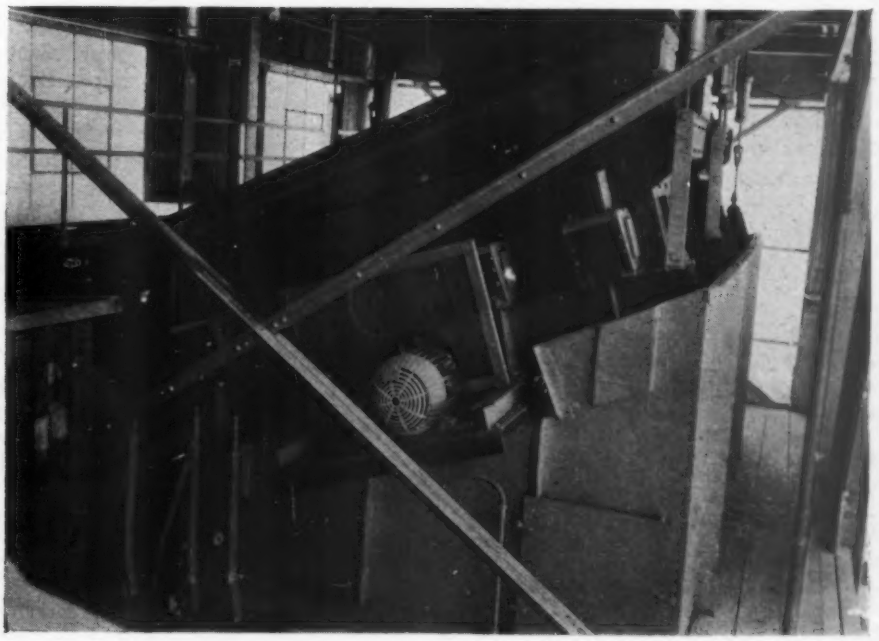
Two deep wells supply a total of 2,500 g.p.m. of water for washing. Each well is served by a Layne-Bowler pump, one being driven by a 150-h.p. motor discharging through a 10-in. pipeline, and the other powered by a 200-h.p. motor and supplying a 12-in. line.

There are 22 loading bins beneath the screens in the mill building with a total capacity of 5,500 tons of finished material. Gates in the tunnels and along the north side can load rail-road cars and trucks for delivery, or for transfer to excess material piles in the yard. Outside gates on the south side of the bins feed or blend aggregates onto a belt running to a batch plant which adjoins the plant office.

The Irwindale plant is served by the Pacific Electric and Southern Pacific Railroads. Shipping records show that about 59 percent of the output goes by rail and 41 percent by truck. Sand is the main product tonnage-wise; a recent analysis of shipments from Irwindale shows 43 percent as sand, 39 percent uncrushed gravel, and 18 percent crushed rock.

Along about the time the im-

(*Continued on page* 72)



Separate Building for Agstone Mill Simplifies Operations

By EDWARD BRUNENKANT

another ON THE SPOT report

FOR many years, from 1930 to 1946 to be exact, the Buffton Stone Co., Buffton, O., produced agricultural limestone and crushed stone in the same building. In order to reduce the nuisance and hazard to the men created by the large amounts of dust generated in the pulverizing operations, the agstone mill was run only at night or very early in the morning. While the demand for agricultural limestone was relatively small, this arrangement worked out quite satisfactorily. When, however, neighboring farmers began to make liming their fields a regular habit, the combined setup proved to be much too inflexible. Accordingly, in 1946, the management of the Buffton Stone Co. decided to separate the two operations, leaving the crushed stone plant in one building and enclosing the agstone mill in a second. This separate building arrangement has all the advantages of the old setup —utilization of a common primary crusher, screens, etc.—but with a number of additional assets of its own. These include confinement of the finely ground material to a more easily controlled single area, better storage and loading areas, more flexible production, and a number of other advantages.

• A general view of the Buffton Stone Company's plants at Buffton, Ohio. The structure at the left houses the crushed stone machinery, while the one at the right is the agstone plant. The two operations were separated because of serious dust problems.

Feed stone for the agstone plant is pulled out of the crushed stone bin in minus ¾-in. size, hauled the few hundred feet to the mill in a company-owned 3-cu. yd. dump truck (one of the two used for quarry haulage) and discharged into a hopper. A bucket elevator carries the stone to the top of the plant and discharges it on a single-deck Simplicity vibrating screen fitted with a ⅛-in. cloth. That material passing through the screen falls directly into the agstone bin, while the oversize is chuted to the ground level and passed through a Jeffrey 24- by 30-in. hammermill. The pulverized material is carried up on the same bucket elevator and re-passed over the vibrating screen. The plant has a capacity of 12 tons of agstone per hour. Storage capacity is rated at 50 tons with additional ground space for stockpiles when needed. Wide driveways beneath the bin al-

(*Turn to p. 74*)

• The minus ¾-in. stone is first passed over a single-deck screen fitted with ⅛-in. cloth. Throughs fall directly into the agstone bin; the remainder goes to the pulverizer.

• Left: Minus ¾-in. stone is drawn from the crushed stone plant and hauled the short distance to the agstone plant in dump trucks.

• Right: All pulverizing is handled in this 24- by 30-in. hammermill. The capacity of the plant is 12 t.p.h.

Men of the Industry—J. Don Alexander

From Planes to Movies to Vermiculite and Perlite

A PARTNERSHIP that began with an idea and grew into a multimillion-dollar motion picture advertising business started 46 years ago in Keokuk, Iowa, when the Alexander brothers, J. Don and Don M. set up an old French stereopticon and projected trick moving colored slides and advertising messages across Main Street.

That original show was staged on two bed sheets sewn together. The improvised screen was attached to a store front.

The old stereopticon, the colored slides and the hand-lettered advertising (solicited from local merchants by J. Don) attracted considerable attention. Traffic became congested, the police intervened, yet the screen advertising business went on until all of their slides had been shown, and interest, as well as business, waned. They had learned something of salesmanship and the value of memory-compelling pictures which was later to assist J. Don in the development of the largest theatre screen advertising business in the world.

Fifteen years later, in 1919, the Alexander Film Company was organized in Spokane, Wash. As the new business flourished, the brothers sold an electrical contracting business they had built up. The money from this sale they put into their new enterprise.

It wasn't long until they realized that the new company needed a central shipping point, as well as year-round favorable weather conditions for outdoor photography; so the Alexanders moved the entire organization to Denver and later to Colorado Springs, Colo.

Shortly after moving to Colorado the Alexanders engaged in an entirely new business; the manufacture of airplanes.

This is how it happened. With a thriving film advertising business on his hands and the growing need for wider sales coverage, J. Don began to look around for a faster means of transportation for his expanding sales force. Trains were inconvenient, and automobiles too slow; so he turned to the airplane.

What J. Don wanted was a light, safe plane that could be flown about the country at little expense. He

J. Don Alexander, founder of the AleXitE Engineering Division.

set his engineers to work designing a new plane. They designed the Alexander Eaglerock, a light, safe training plane that sold for $2,475. Production, begun in 1924, quickly went into high gear and it wasn't long until orders were backlogged.

J. Don was certified as a pilot in 1925 with license No. 92, and was soon hopping around the country establishing dealers for the fast-selling Eaglerock.

But J. Don wasn't satisfied with his Eaglerock. He started thinking again. This time he thought along lines of streamlining — b r e a k i n g down wind resistance. Again his engineers and draughtsmen went to work and came up with plans for a new low-wing, streamlined monoplane with the first retractable landing gear. It was the famous Alexander Bullet, an airplane that was destined to revolutionize the airplane industry the country over.

Everything progressed smoothly with the new aircraft company. Sales boomed until they had the second-largest output of planes in the world. Then the depression caught up with the Alexanders. It was found necessary to liquidate the aircraft company in order to pull the film advertising business through the depression.

The film advertising company survived the depression, and again began to thrive. Then World War II came along and caused J. Don and brother D. M. to go into still another business venture, that of manufacturing lightweight building materials from nonmetallic minerals.

J. Don has long been interested in geology, and when the growing shortage of raw film stock began to threaten the life of the film company, he formed a new venture known as the AleXitE Engineering Division of Alexander Film Co. After much pioneering and experimenting he began the manufacture of lightweight building materials from vermiculite ore. He gave the vermiculite ore products the trade name of AleXitE.

Although the d e m a n d for AleXitE products was great, limited deposits of vermiculite ore in the Colorado area and adjoining states caused J. Don to investigate the properties of perlite, an ore with properties similar to vermiculite, but much stronger for building construction.

Extensive research and prospecting by the AleXitE staff proved that high-grade perlite ore not only existed in tremendous deposits in the Colorado region, but that the ore itself was purer and of a better quality than that formerly uncovered. Little time was lost in getting started in the manufacture of perlite products, trade-named PerAleX.

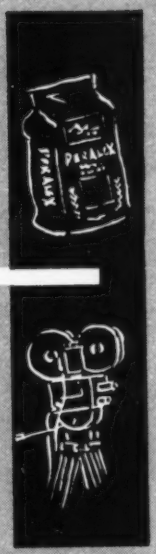
During the last six years much research and development has been accomplished by the Alexanders in building several rotary expansion furnaces, processing ore and in handling equipment. Expanded perlite is being shipped in increasing quantities over a wide area, and many licensees in various parts of the country are now expanding raw ore from Alexite mines.

With their new AleXitE operation running smoothly now, one might ask: Is the vermiculite and perlite pioneering over for the Alexanders? One might think so, but J. Don, now 63 and still working on new ideas, says that he and his brother, D. M., have just tapped the surface of a wonderful new mineral for industry, perlite.

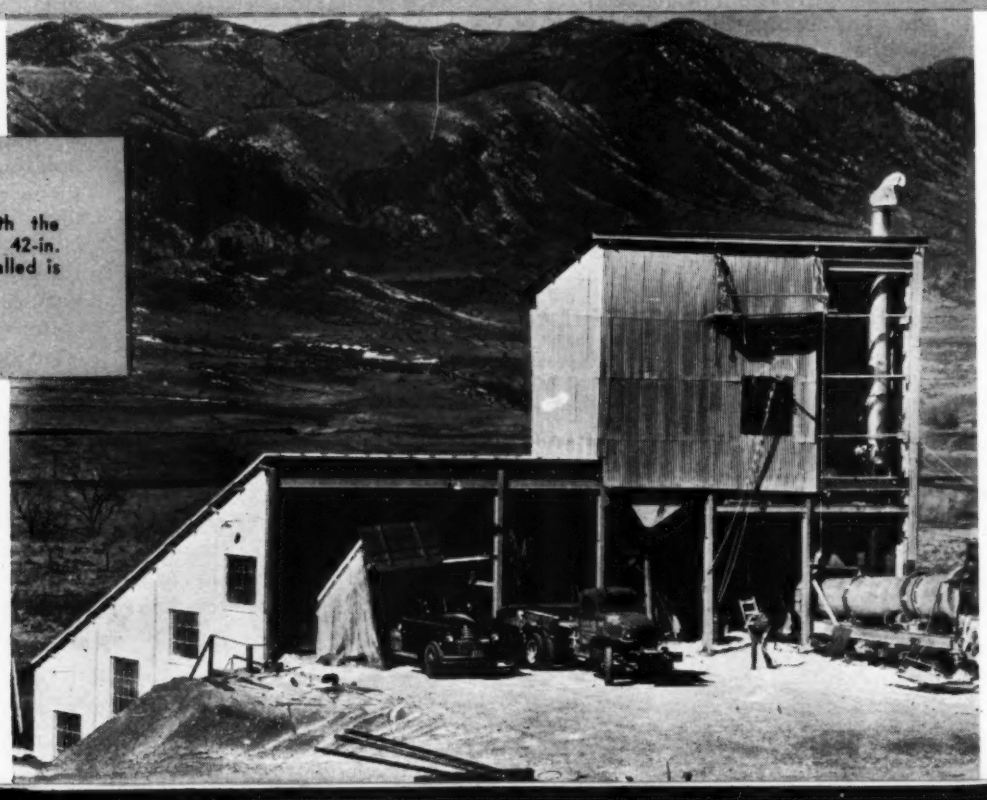
Aerial view of the Alexander Film Co. property, showing sound stages and other buildings. The administration building is in the foreground. The perlite plant is in the left background.

LIGHTWEIGHT AGGREGATE

ADVERTISING FILMS



Perlite from Rocky Mountains shipped over wide area by division of Alexander Film Co.



The perlite expanding plant with the Rockies in the background. The 42-in. by 23-ft. second kiln recently installed is at the right.

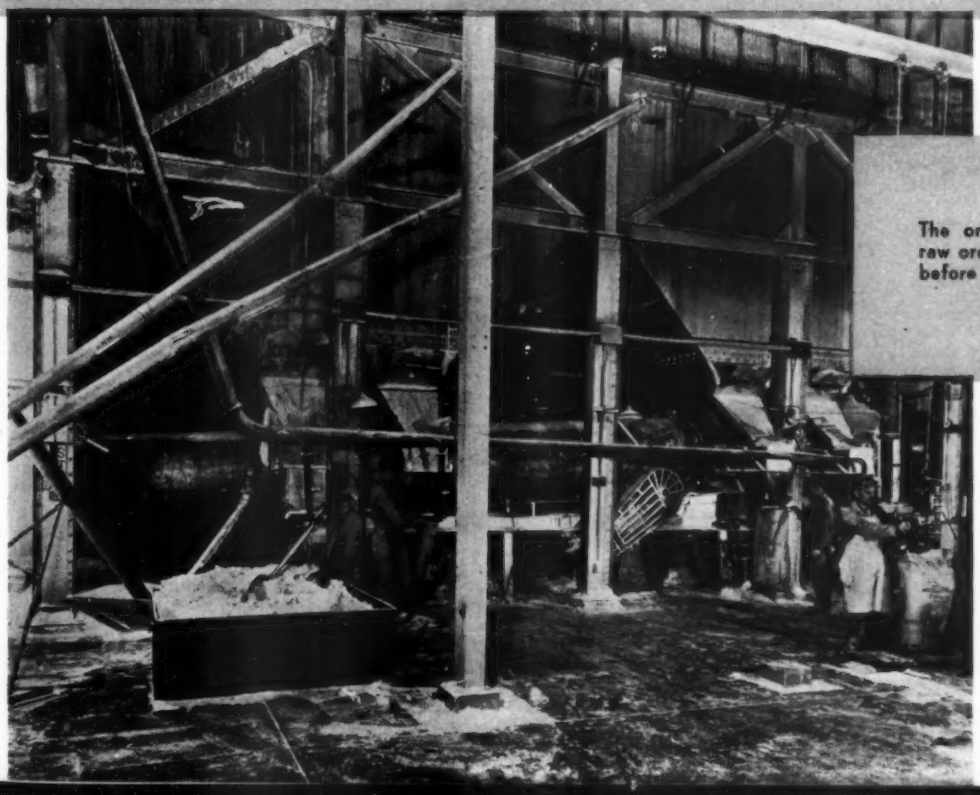
A general view of the perlite deposit in the high Rockies. Shown is one of the portable crushing and screening plants and the 7/8-cu. yd. power shovel.

By WALTER E. TRAUFFER

another ON THE SPOT assignment

IT IS often said that our pioneering days are over, which may be true geographically, but in the nonmetallic mineral industries there always seems to be room for those with vision and initiative. Occasionally a new mineral or a new use for an old one is discovered, and a new industry develops. Perhaps the latest discovery of recent years, and the most spectacular, is perlite, a volcanic glass which has already become an important factor in the lightweight aggregates and other fields. Perlite is similar in composition to obsidian but has a pearly luster. It contains 2 to 5 percent of water which, when released at the softening temperature of the ore, effects a marked expansion. The various forms of perlite range from 65 to 75 percent SiO_2, 5 to 10 percent Al_2O_3, 2 to 4 percent each of Fe_2O_3, Na_2O, K_2O and CaO. Most of the perlites so far developed are in the very light category and are most suitable for various insulation purposes because of their unusually low bulk density, and excellent heat and sound insulation. The heavier and stronger grades of perlite suitable for aggregate in load-bearing concrete have been given less attention.

One of the first to visualize the potentialities of perlite was J. Don Alexander (see Men of the Industry article in this issue), president of the Alexander Film Co., Colorado Springs, Colo., and its nonmetallic minerals producing division, AleXitE Engineering. The 30-year-old film company is owned principally by Mr. Alexander, members of his family, and officers of the company. It is probably the world's largest producer of short length advertising motion pictures; but J. Don's driving energy could never be confined in any one field, and the potentialities of the nonmetallic minerals field in the Rocky Mountains have always intrigued him. Some years ago he



The original 40-ft. rotary kiln with the raw ore bins above. This photo was taken before the equipment was fully enclosed.

acquired deposits of vermiculite in the Rockies and developed these, marketing the product nationally. More recently perlite attracted his attention; and after thorough investigation of over 280 deposits in various states, he selected about a dozen in an area southwest of Canon City, Colo. The one now being actively worked is known as the John-Claire mine, which is estimated to contain over a million tons of ore. A second deposit is being worked occasionally. The location of these deposits on the east slope of the Rockies gives them a freight rate advantage to the east.

A typical analysis of the raw ore from the John-Claire mine follows:

SiO_2	.....72.7	percent
Al_2O_3	.....12.4	percent
H_2O	..... 4.0	percent
CaO	..... 0.75	percent
Fe_2O_3	..... 1.35	percent
Na_2O	..... 2.95	percent
K_2O	..... 5.83	percent

The raw ore has a specific gravity of 2.26 and the finished product varies from 0.202 to as low as 0.09 for certain "selects". It has a K factor of about 0.33.

Mr. Alexander started in on a small scale, shipping the classified and purified raw ore by trucks to a small plant in Colorado Springs, where the present expander was developed. Late in 1947 limited commercial shipments of raw ore were begun and quantity production started early in 1948, when new and larger plants were completed at the mine and at Colorado Springs. The capacity of the crushing and screening plant at the mine is 600 tons per day. This can be increased as fast as the rapidly-growing demand requires. A second Cedarapids plant has recently been installed to increase the output. The total mine investment is now said to be nearly one-quarter-million dollars.

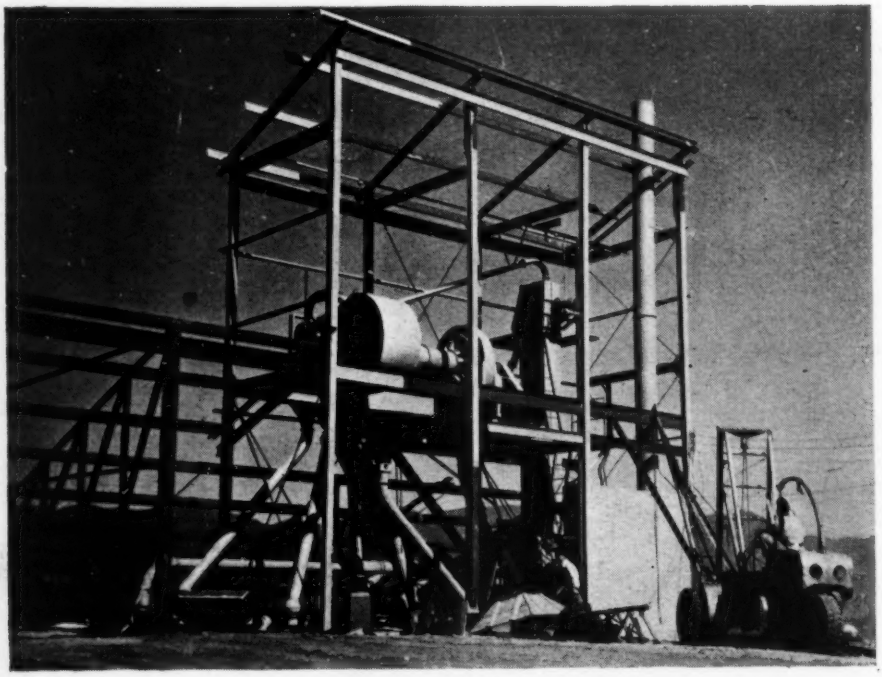
AleXitE Engineering is developing its business on the basis of quality, standardization and service. Research is constantly being carried on to improve the quality of the product, methods of processing, etc. Most of the production of raw ore originally went to the company's expanding plant at Colorado Springs. The finished material, PerAleX, was shipped from Colorado Springs over a wide area east of the Rockies. This served to develop a wide market for the product and the long-range plan of serving expanders in various parts of the country to whom raw ore is shipped direct from the mines in bulk box cars, screened to size, dry and ready for feeding furnaces without crushing.

Licensing is proceeding rapidly and raw ore is now being shipped to about 20 expanders over the entire area east of the Rockies. Additional operators are constantly being added. No exclusive rights are given for any area but all exclusive users of PerAleX are entitled to use the AleXitE copyrighted trade names and the company's patented expanding system. Nearby inquiries are referred to customers. The company does not license or build these expanders but furnishes each licensee with designs, drawings and specifications, and also advice and assistance in getting under way. Merchandising and production information are provided and formulae for the manufacture of a variety of products are furnished.

The ore is sized at the mine in three sizes: (1) concrete, (2) plaster, and (3) fines. This method eliminates much of the usual waste at the furnaces due to unwanted fines or other sizes. It also has other definite advantages over the previous practice of shipping unsized raw rock and as the elimination of crushers and screens and the dust nuisance. In this way everything is kept under control, as the use of a raw material uniform in size and quality makes it possible for processors of the ore to furnish a uniform product to users. The company also sells in concentrated form various additives necessary to the manufacture of special products. The entire program is being developed on a national scale and will soon be supported by a national advertising campaign.

PerAleX is now being used successfully for a wide variety of purposes. Its largest volume outlet is as a concrete aggregate. It is finding increasing favor with those who want a lightweight concrete, capable of bearing reasonable loads, and with those who want a concrete of high insulating value, regardless of weight

A bucket loader and some of the trucks, with the portable crushing and screening plant in the background.



The plant before it was closed in, showing the arrangement of the classifier, the dust collector and the spouts. The loader at the right is being used in erection work.

and load bearing qualities. Concrete made with it has about ten times the insulation value of sand and gravel concrete, and about one-third the weight. PerAleX is in growing demand with manufacturers of concrete products and is being successfully used in concrete bricks, blocks, joists, etc. Its other construction applications include wall plaster (both hard and acoustical), loose fill insulation for walls and roofs, stucco, etc. Its industrial uses are many.

In the John-Claire deposit the ore seems to have been a flow which in some places was later altered. It varies in depth from 8 to 75 ft. and overburden varies from 6 in. to 2 ft. in depth. This is removed by an Allis-Chalmers HD14 tractor equipped with a Baker hydraulic bulldozer. This tractor is equipped with a torque converter (fluid) drive which is regarded as a decided adtantage.

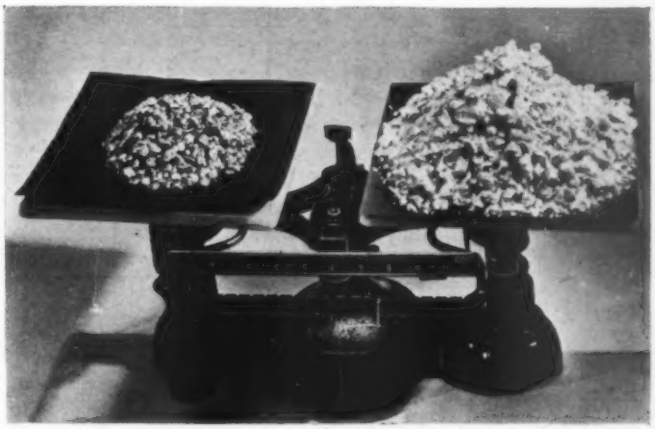
The ore is recovered by open quarrying in the same manner as limestone with comparatively little degradation. About one-third as much powder is required as for limestone, since the ore fractures readily and no secondary shooting is required. Worthington and Gardner-Denver jackhammers and a portable air compressor are used. A General ⅞-cu. yd. shovel loads the stone to the hopper of the Cedarapids 2-unit portable plant. A pan feeder serves the 18- by 48-in. jaw crusher, which is set at 1-in. opening. A belt conveyor feeds this material to the second unit of the plant. A secondary crusher further reduces the ore, which is then conveyed to a 2-deck vibrating screen. Oversize goes through a 20-in.-diameter by 36-in. roll crusher and is returned to the belt ahead of the screen by a circular conveyor. The material through the second deck is conveyed to a Denver-Dillon screen with 30-mesh openings. The No. 2 product off the top of this screen and the No. 3 material going through it are carried on separate belt conveyors to stockpiles. Another conveyor stockpiles the No. 1 material over the second deck of the first screen. Trucks can be loaded direct from these conveyors but are usually loaded from the stockpiles by a Scoopmobile.

The perlite ore for expansion at the company's plant is hauled in trucks 70 mi. to Colorado Springs. The deposit is 30 mi. southwest of Canon City but it is 36 mi. from the nearest railroad junction and it would be an addtional 118 mi. by rail to Colorado Springs via Pueblo. As a result the truck haul is shorter, cheaper and more dependable. Raw ore shipments to licensees are, however, hauled to this junction for rail shipment. A fleet of four or more Ford trucks is now used and each makes two round trips daily, hauling a 7-8 ton load. More trucks are being added as the demand grows. Gasoline trucks are preferred as they give better compression braking on steep grades and as the many roads and bridges on this route with low load limits prohibits the use of larger trucks.

Three sizes of raw ore are produced: 8- to 14-mesh, 14- to 30-mesh, and minus 30-mesh. The medium size, used for making accoustical and plaster aggregates, is the most popular. The ore is dumped from the trucks either direct into the two 15-ton steel plant feed bins or into stockpiles from which it is reclaimed into trucks by a Ford tractor with a Baldwin loader.

From the bins the ore is fed by gravity through slide gates to a screw feeder driven through a Link-Belt P.I.V. variable speed reducer. This controls the rate of feed to the furnace or expander. This rotary kiln is 36 in. in diameter by 40 ft. long and is lined full length with firebrick.

The big problem in expanding perlite has always been the prevention of fusion. This is said to be solved in the AleXitE furnace by having a smooth base lining in the first 6 ft. Then for 10 ft. there are three spiral refractory lifters which allow the lighter material to be carried out of the kiln by the vacuum draft, leaving the heavier material in the kiln for longer exposure. The kiln is fired with natural gas from the Texas fields. A gas burner of the company's own design is used which has a humidity control to hold



On the left side of the scale is a small quantity of PerAleX ore; on the right, the same amount of ore expanded to five times the volume.

Right: The machine used for making perlite concrete bricks. Below: The switchboard and the recording pyrometer at the perlite plant.

at an even level the moisture content of the gas and air mixture going into the kiln. This control alone is said to save about one million B.t.u.'s per ton over the old standard type of burner used. The preheat is waste heat from the top of the kiln hood. The temperature is automatically controlled by two Brown potentiometers, one 10 ft. from the feed end and the other mounted in the hood and aimed 20 ft. in from the firing end. The temperature required depends on the size of the ore and varies from 1700 deg. F. for the fine ore to 1975 deg. F. for the coarse.

The pyrometer control is manually set at a certain amount over the desired temperature. When the temperature drops below the set level a mercoid switch cuts off the material feed and when the desired temperature is regained the fed is automatically resumed. A Wheelco Flame-O-Trol automatically stops all equipment if the burner flame goes out due to back pressure in the kiln or some other reason.

Fuel consumption is about 112,000 B.t.u.'s per ton with gas which tests 1,000 B.t.u.'s per cu. ft. at the Texas fields but only 820 B.t.u.'s at the 6,147-ft.-high plant level. At sea level fuel efficiency would be much greater. It is interesting to note that at night the capacity of the furnace is 10 percent greater than in the daytime. Its capacity averages about 1½ t.p.h. but ranges up to 2 t.p.h. for some sizes. Actually only 23 ft. of its 40-ft. length is required. The kiln is gear driven by a 10-hp. motor and is mounted on water-cooled trunnions with Timken roller bearings.

The kiln draft is controlled by an American Air Filter Co. No. 20 dry Rotoclone which also collects dust from bins, elevators and packers in this plant. The coarser dust is collected dry and goes into a bin. The extreme fines, forming about 2.5 percent of the dust, are collected in a wet Rotoclone. The resulting slurry is wasted. The wet collector exhausts through a steel stack, the air being 99.7 percent free of dust.

The ore is actually in the furnace only 3 minutes and is discharged at a temperature of 800-900 deg. F. An inclined bucket elevator feeds the expanded ore into an air-cooling and classifying system of original design. The first section of this unit has a 10-mesh slotted punched screen bottom with a fan blowing cool air up through it, movable baffles making it possible to distribute this air as desired. These baffles also make it possible to control the amount of cooling in relation to the temperature of this outside air. The heavy material—gangue, tramp iron, rock, unexpanded or fused perlite, etc.—drops down through the air stream. The screen is inclined and has a slight horizontal shaking motion which propels the material over the end and into a waste hopper.

The expanded PerAleX weighing less than 20 lb. per cu. ft. is carried by the air stream over 5 partitions or baffles in a second chamber, the lightest material going furthest. These baffles are adjustable for height and spacing for control of gradation. In this manner five sizes are produced, each going through telescoping spouts into a separate 900-cu. ft. bin compartment. The spouts have ball-and-socket joints and can be moved to make any desired mixture in any bin.

The extra-fine dust, along with that from the collector, is in the No. 1 bin. This product weighs 15 lb. per cut. ft. with very little variation. The material in the No. 2 bin can be varied from 8 to 12 lb. per cu. ft., depending on the demand, but usually runs 9 to 10 lbs. The No. 3 bin contains material for finish plaster, etc., weighing from 4 to 6 lb. per cu. ft. Another bin compartment usually stores a blend of sizes and any desired combination can be made.

Bagging is done by four 4-cu. ft. volume baggers of company design, one under each bin. The Bemis 3-wall bags have sewed bottoms and are sewn shut on top after filling. Each is actually loaded with 4⅛ cu. ft. to insure the desired volume on delivery. Bag weights are checked to insure accurate weight and also to determine furnace run.

When the plant was first built in 1946, equipment was scarce and the 36-in. by 40-ft. kiln was the only one available. It was later found that a 23-ft. kiln of the same diameter would be just as efficient and the AleXitE engineering department have designed a rotary tube furnace for two of their oil customers. One is already in successful operation and delivering about 1½ tons of plaster aggregate per hour.

A pilot plant was also built which was the forerunner of the "Junior" expanding units which PerAleX licensees are preparing to put in operation in various parts of the country. It is used for both production and testing. This plant is similar to the large one but on a smaller scale, having a plaster aggregate capacity of about 50 cu. ft. per hr. The 15-in. by 16-ft. rotary expander is gas fired and has the same speed, temperature and exposure time as the larger units. Instead of an elevator and conveyor the expanded perlite is carried from the expander by an air conveyor system of own design.

At one end of the kiln building, in a separate room, is a complete Dunbrik manufacturing plant which manufactures PerAleX lightweight concrete brick. These are made in the ordinary 2½- by 8- by 12-in., 2¼- by 8- by 8-in. and 2¼- by 4- by 8-in. sizes. The standard Dunn skip mixer and machine setup is used. With the perlite aggregate the concrete must be mixed a little longer than when sand and gravel is used. The finished bricks are cured by live steam in two rooms built of perlite brick before going to outdoor yard storage.

Officers of the AleXitE Engineering Division are: J. Don Alexander, president; D. M. Alexander, vice-president; Ed Foster, secretary and treasurer. Ray Ebeling is plant superintendent, C. W. Taylor is research director and chief chemist. Jack Green is research and production engineer, Wm. Arnold is mine superintendent, and E. F. Dillon is sales manager. Kilbourn D. Clark is vice-president in charge of Eastern affairs at the New York office, 500 Fifth Ave.

Consolidated Rock Products

(*from page* 65)

provements mentioned were begun, the power frequency was changed from 50 to 60 cycles by the supplier, Southern California Edison Co. This necessitated the change-over or rewinding of the many motors in use at the plant. This has all been completed on schedule, however, and at the expense of the utility company. Connected horsepower at the Irwindale operations now totals 2,305. Most of the motors were supplied by Westinghouse.

The improvements were designed by Arthur E. Howland, the company's structural engineer, and were installed under the supervision of Harry D. Jumper, chief engineer, and Mr. Griffin. Frank Carroll is plant superintendent. The plant employs about 60 men.

In recent years, the Irwindale plant has each summer played host to the entire Consolidated organization, its families, and guests at an outdoor barbecue held on the plant property. Attendance has run as high as 2,500 persons, giving the chefs a busy time at the charcoal pits, where many a side of beef was done to a turn over the coals

Large-Capacity Rotary Kiln Lime Plant Being Built by Pioneer Mexican Producer

another P&Q exclusive

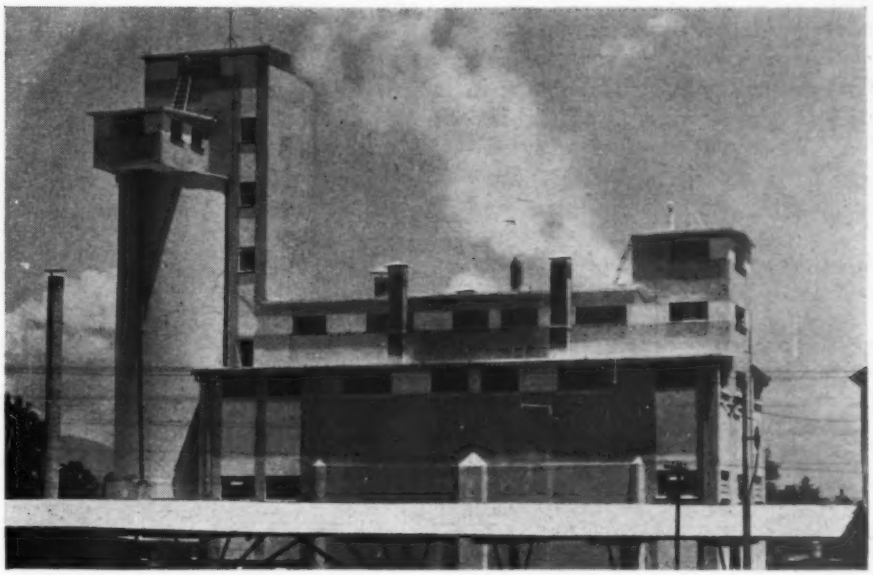
THE founder of a successful, modern and profitable lime industry in the Federal District of Mexico, Alejandro Riefkohl, visualized the industrial possibilities of the area

By SANTIAGO SOTO

nearly 50 years ago. It was in 1900 while he was working on the drainage tunnel for Mexico City, now a community of over 3,000,000 inhabitants, that he began to work for the realization of his plan.

He took over a small home-made vertical lime kiln at "El Tajo", near Tequixquiac, in order to produce the lime required for the drainage tunnel construction work. In 1904 he constructed the first kiln in the Pixcuay hill in Apaxco, State of Mexico, about 60 kilometers north of Mexico City on the Mexico-Laredo Railway. This is the site of the present plant of Abastecedora de Cal de Apaxco, S. A., and Cal de Apaxco, S. A., as well as that of a large cement company, Compania Mexicana de Cemento Portland Apasco, S. A. There are also numerous small limestone producers in the neighborhood. As can be seen in the accompanying aerial photograph, the operation in this hill constitutes what is probably the largest limestone quarry for limestone purposes in Mexico.

The work initiated by Alejandro Riefkohl was continued by his son, Ing. Luis Riefkohl, a graduate mining engineer of Freiburg University, Germany, who was later assisted by his brothers, Alejandro Jr., Gustavo and Max. The four broth-



• The hydrating plant of Calidra, S.A., Mexico City, which was built in 1939.

• An aerial view of Pixcuay hill, Apaxco, Mexico, which contains inexhaustible supplies of limestone for the lime and cement plants shown. At the left is the portland cement plant of Compania Mexicana de Cemento Portland Apasco, S.A. The new rotary kiln lime plant of Calidra, S.A., is being built about one mile to the left. At the right are the two vertical kiln lime plants and the hydrating plant of Cal de Apaxco, S. A.

ers, with their sisters, now own all the shares in the present companies—Calidra, S. A., with a plant at Mexico City; Cal de Apaxco, S. A., and Abastecedora de Cal de Apaxco, S. A. These companies own the large quarries, shown in accompanying photograph, which feed the eight vertical kilns now in operation at Apaxco, State of Mexico. To meet the increasing demand, these vertical kilns were equipped with oil burners and forced draft and can now produce from 150 to 200 tons of quicklime per day.

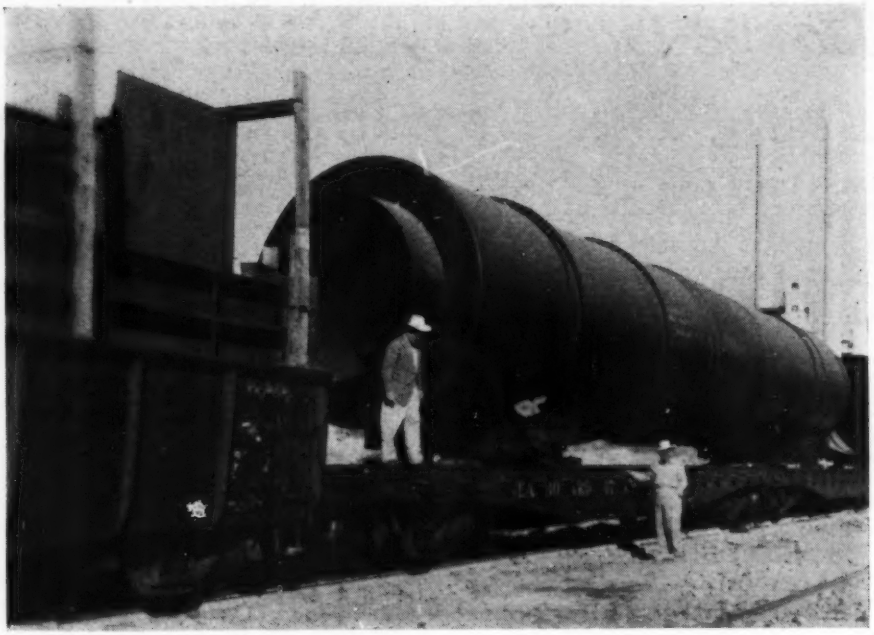
In 1931 the Riefkohls first started manufacturing hydrated lime. They had a hard battle to establish this product in a market which up to that time had known only quicklime. Their experiment, however, was so successful that it was not very long until their plant could not supply the demand.

With the new product established, the Riefkohl brothers ordered their present hydrating plant from Germany. It was installed in 1939, with a capacity of about 200 tons of hydrate per day, in what was then one of the suburbs of Mexico City, F.F. C.C. Nacionales No. 155. This community is now well within the city limits. The plant, one of the most complete and modern in any Latin-American country, soon began to produce a grade of lime previously unknown in Mexico. Commercial lime of outstanding quality was also produced.

During World War II an unprecedented construction boom was experienced in Mexico, and the lime industry became exceptionally profitable. The Riefkohls saw the wisdom of enlarging their production capacity. Accordingly, they purchased in Detroit a complete non-operative lime plant, including rotary kiln and hydrating plant, which was dismantled and sent to Mexico in 1943-44.

This plant was installed on a site adjoining the Riefkohl kilns and quarries at Apaxco, and is now producing from 80 to 100 tons of hydrated lime per day, which is bagged at the plant and sold principally in Mexico City. The excess of quicklime production from the kilns at Apaxco is sent to the Mexico City hydrating plant, where it is hydrated, bagged and marketed.

In 1947 the Riefkohls, knowing perhaps better than any other concern in Mexico the financial possibilities of lime, placed an order with the Kennedy Van Saun Manufacturing and Engineering Corp. for a 10- by 150-ft. rotary lime kiln, complete with preheater and deheater, which should produce approximately 225 tons of quicklime per day.



• A section of the new 10- by 150-ft. kiln arriving at the site of the new plant.

This calcining plant will be preceded by a complete crushing plant. Limestone hauled from the quarry by truck will go through the primary and secondary crushers and proceed by belt conveyor and bucket elevator, after sizing, to the preheater of the rotary kiln mentioned above.

Two possibilities are being considered with reference to the hydrating plant for the new kiln: either to transfer the hydrating facilities and plant now at Apaxco to the present plant site or to order an entirely new hydrating plant. Economic conditions in the lime market will be the determining factor in deciding which course is to be taken.

The new kiln will be installed about 1½ kilometers south of the present installation at Apaxco. One decided advantage of the new site over the location of the present plant and the adjoining cement and lime plants is that it has an independent railroad spur instead of being on the railroad main line. With the new facilities, Calidra, S. A., and Cal de Apaxco, S. A., will have one of the largest and most modern lime-producing plants in all Latin-America.

The owners of the concern are greatly admired in Mexico for their achievements, which were attained only after working out problems successfully and exercising perseverance and foresight. At the height of success the Riefkohls have not rested upon their laurels. As they were the original producers of hydrated lime in Mexico nearly two decades ago, they are again pioneering—this time by putting on the market new hydraulic limes.

Ohio Producer

(*From page* 66)

low ample room for the spreader-trucks to pull in and drive out.

The company guarantees all its agstone as having a calcium content of 92 percent, although the average analysis made by the AAA places the calcium equivalent at a slightly higher figure. Practically all of the agstone is sold on a spread basis and is delivered in company-owned trucks. They have three spreaders: a Baughman, a Flink, and one Marion.

To date the company has done no local advertising to promote the sale of its agstone. When we discussed this subject with the superintendent, Raymond Conrad, he said that the farmers in that area were well advised as to the benefits of liming the land. One farmer, he remarked with a justifiable trace of pride, had limed his whole farm out of his own pocket. An exception perhaps, but certainly a long stride in the right direction.

Our congratulations and good wishes to the *Ideal Cement Mixer* on having reached its third birthday. It was in April, 1946, that the first *Mixer* went to press, on the birth date of the late Charles Boettcher, who would have been 97 years old this year.

Report on Current Labor Developments

Trend of Wage Adjustments

APPROXIMATELY 10 percent of the labor agreements negotiated in February and March called for no change in wages. This information is derived from the most recent monthly report on Current Wage Developments released by the U. S. Bureau of Labor Statistics.

By S. HERBERT UNTERBERGER
Director of Research
Labor Relations Information Bureau
Washington, D. C.

Other items of interest from this report are that out of 243 agreed upon wage adjustments, three of them called for wage decreases. These occurred in connection with previously agreed upon adjustments in conformity with changes in the cost of living index. (For a fuller discussion see Report on Current Labor Developments, PIT AND QUARRY, April 1949.) Of the wage adjustments involving increases, about 20 percent were for 5 cents an hour or less, 45 percent were between 5 and 10 cents, and 35 percent were for more than 10 cents an hour.

This is in substantial contrast to the situation during February and March of 1948, when the same Bureau of Labor Statistics report showed no wage decreases and less than 4 percent of the labor agreements negotiated called for no wage increase. On the other hand, of wage adjustments involving increases, about 5 percent were for 5 cents an hour or less, 40 percent were for increases from 5 to 10 cents, and about 55 percent were for increases in excess of 10 cents an hour.

This demonstrates a significant trend in the direction of fewer and smaller wage increases in 1949.

Trend of Other Employment Benefits

With respect to other employment benefits (e.g. sick leave, vacations, pensions, health and welfare plans, etc.) no similar declining trend is perceptible. In fact, there are many labor relations experts who claim that other employment benefits are still on the upgrade. It is very difficult to measure this trend, but there is little doubt that the demands for such employment benefits, particularly for pensions and health and welfare programs, are more frequent this year than ever before.

In this connection, the Chamber of Commerce of the United States has recently released a very significant study, entitled *The Hidden Payroll, Non-Wage Labor Costs of Doing Business.*" This report makes the point that "The hourly wage rate is no longer a true reflection of the labor costs of operating a business. Labor costs are materially increased by the addition of such legally required payments as social security, and by voluntary or agreed-upon payments for pensions, vacations, holidays, profit-sharing programs and a score or more other items".

The significant findings of this study are as follows:

1. Employment benefits add, on the average, 15.4 percent to the total wage bill. This is equivalent to 20.5 cents per hour or $424 per year for each employee. The 15.4 percent broke down as follows: 3.2 percent for legally required payments such as social security and workmen's compensation; 4.5 percent for pension plans, life insurance, health and welfare, separation allowances, discounts on goods and services, free meals, and other miscellaneous payments; 1.8 percent for paid rest periods, lunch periods, wash-up time, travel time, clothes change time, etc.; 4.8 percent for payments for time not worked, such as vacations, holidays, National Guard and jury duty; and 1.1 percent for other items including profit sharing payments and Christmas and other bonuses.

2. For some firms it was as low as 5 percent while for others it was as high as 42 percent. For some industries it was as low as 9.8 percent (manufacture of autos and trucks), while for others it was as high as 23.4 percent (banks and financial institutions). For the category which included the pit and quarry industries, these employment benefits averaged 13.1 percent.

3. The cost of employment benefits has grown tremendously since 1929, when, according to the Department of Commerce, they represented only slightly more than 1 percent of the wage bill.

With wage rate increases becoming increasingly difficult to secure, it is likely that so-called "fourth round" negotiations will be devoted in great part to the securing of employment benefits. As a matter of fact, there is already substantial evidence of this trend. The Chamber of Commerce has very properly brought to the employer's attention the fact that such employment benefits are a part of total labor cost, no less so than wages. And they have provided very comprehensive data on the magnitude of that additional cost.

Walsh-Healy vs. Wage-Hour Act

A decision of importance to every employer who works on a government contract was handed down recently by the Circuit Court. The Court stated that employees working on government contracts and therefore covered by the provisions of the Walsh-Healy Act are not at the same time covered by the provisions of the Fair Labor Standards (Wage and Hour) Act, even though they are employed in interstate commerce.

Prior to this decision it was generally assumed that both laws applied under certain circumstances, and the Wage-Hour Administrator adopted that position. He held that the employer must comply with the provisions of either law, whichever is more favorable to the employee. Henceforth, with respect to those employees who are working on government contracts, the employer need only be concerned about complying with the provisions of the Walsh-Healy Act.

One important consequence is that an employer who has violated the Walsh-Healy Act is responsible only for the unpaid back pay, rather than subject to the more punitive provisions of the Fair Labor Standards Act, which might require the payment not only of back pay but also of liquidated damages and attorneys fees.

Pension Plans Must Be Bargained

The Supreme Court refused to review the Inland Steel case, which leaves the ruling of the Circuit Court requiring employers to bargain on retirement plans as the law of the land. There is only one qualification on this ruling, and that is before the government will require an employer to bargain on this subject, the union must be in full compliance with the law. At present that means that its officers must have filed non-Communist affidavits and it must have filed its financial statements

(*Continued on page* 90)

Whitehead Brothers Co. Adds Fifth Sand Plant to Cape Cod Network

• A general view of the Whitehead Brothers Company plant, located at Marion, Mass. The washing plant is at the left, and the dryer at the right, with the stockpile of damp sand between.

another ON THE SPOT report

FOR more than a century many foundries in the East have looked to Whitehead Brothers Company for their supply of both bonded and unbonded sands. The company's holdings are said to be the largest and most diversified in the field,

By WILLIAM M. AVERY

comprising thousands of acres of high-grade industrial sand deposits, located in the states of New Jersey, New York, Massachusetts, and Rhode Island. Today the company operates more than 50 plants in these states, from which sands for every need and purpose are loaded and shipped to foundries and other industrial sand users throughout the United States and Canada.

One of the most recent additions to this far-flung network is a well-designed and extremely efficient plant located at Marion, Mass., which is some 20 miles due east of Fall River. The pumping plant at this location started operating in 1946, and about a year later a drying plant was placed in service.

Sands in the Marion - Wareham district owe their origin largely to the action of glaciers, lakes, and rivers. Here, along the southern New England coast, was the approximate border of the ice sheet which at one time covered the entire northeastern portion of the continent. Tremendous quantities of gravel, sand and clay were deposited as the great glacier receded, and where the waters rushed from the glacier, the streams were heavily charged with these materials.

Materials deposited directly from the ice sheet have little commercial value, but those which were washed, sorted, and laid down in beds of relatively uniform grain size are of great value to the foundry industry. Marion sand, which falls into this second category, is said to be ideal for certain types of castings and for core blowing. Its silica content runs from 94 to 96 percent. There is some very fine silt in the deposit, but no real clay. Most grains of the material are sub-angular, closely resembling the Wareham Sands in all respects except grain size, Marion sand being the finest grain found on Cape Cod, the A. F. A. F. numbers ranging between 100 and 120.

• Left, Corwin J. Passer, superintendent of the Marion plant, and Frederick B. Clarke, New England manager for Whitehead Brothers.

The Marion plant of Whitehead Brothers' New England works is the largest of the company's five operations on Cape Cod. It is a permanent installation, and it accounts for approximately 40 percent of the Cape Cod production.

Overburden, ranging from 3 to 7 feet in depth, is stripped from the deposit with a "Caterpillar" D-7 tractor and Le Tourneau Carryall. If relatively coarse sand is encountered above the deposit, this material is also removed and stockpiled in anticipation of marketing at some future time. Initially a bulldozer and a crane were used to open up a small pond to float the dredge, a housed platform mounted on four tank pontoons. Straight suction pumping is done with a 4-in. Millville centrifugal pump driven by a 60-hp. General Electric motor. The 4-in. diameter suction pipe, suspended by cables from a steel boom, can reach material to a depth of 35 ft. below the surface of the water.

The sand is delivered to the shore

Output Used as Basic Grain in Synthetic Molding Sands and Cores

plant through sections of 6-in.-diameter pipe supported by small pontoons and connected with Goodrich flexible hose couplings. At present the dredge pump is adequate to elevate the material to the top of the plant, but when the distance from the plant increases the company plans to place booster pumps in the line.

The flow discharges into a revolving scalping screen which has 0.046-by 0.25-in. openings, and from there to an 8-ft.-wide by 23-ft.-long Dorr rake classifier for dewatering. Fines which go over the weir of the rake classifier into the launder flow into a 30-ft. diameter by 8-ft.-high Dorr classifier tank. Any clay that might be present overflows the tank and goes to waste, while the fine sands are raked to the center and pumped back by means of a 4 in. Dorr Duplex diaphragm pump and a Wilfley sand pump.

The dewatered sand drops from the rake classifier onto an 18-in. by 160-ft. stockpiling belt conveyor. Plows located at intervals along the conveyor make it possible to discharge sand at any point throughout its length. Open-top cars are loaded with a Northwest ¾-cu. yd. shovel, while a belt conveyor and a company-designed car loader is used for box cars.

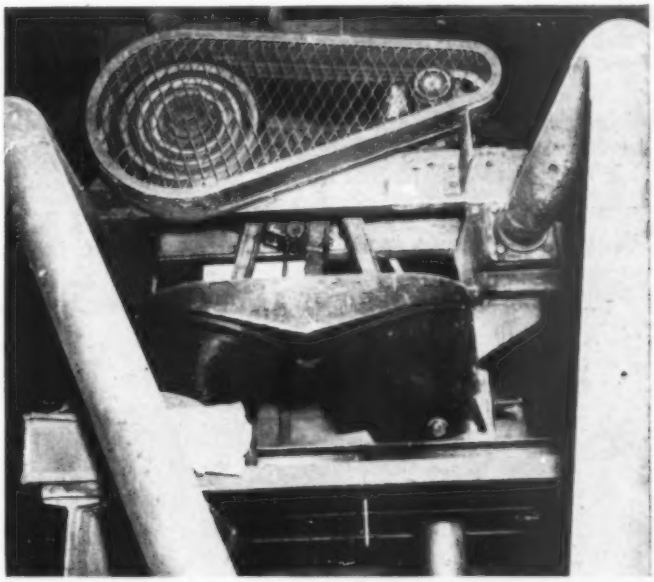
This simple but extremely effective production unit is operated by just two men—one located on the barge and the other at the stockpiling conveyor. In the damp state the sand runs consistently from 100 to 120 A. F. A. fineness. Since the principal demand at present is for bank run material, the plant produces only one grade of material.

• The dredge consists of a housed platform supported on four steel tank pontoons.

The drying plant is housed in a separate building and is operated by a separate crew of men. It is fed from the stockpile by a ½-cu. yd. Sauerman dragline scraper, and the sand is elevated and discharged into the rotary dryer by a paddle drag. Built by Millville Iron Works, the dryer measures 6 ft. in diameter by 30 ft. in length. It is installed without slope; lifters on the inner surface of the shell move the sand through. A Hauck burner using No. 2 fuel oil consumes about three gallons of fuel in drying a ton of sand. The operation is carried out at a temperature of 250 to 275 deg. F.

Any foreign material present in the dried sand is removed by a small vibrating screen located at the discharge end of the dryer. The finished material is elevated and loaded immediately into box cars for shipment. A Stephens-Adamson box car loader is used for this operation.

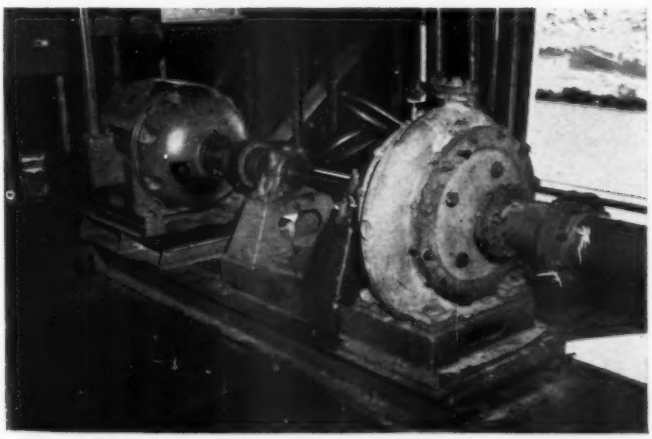
The drying plant can handle about 30 tons of sand per hour, and in current operations, it processes

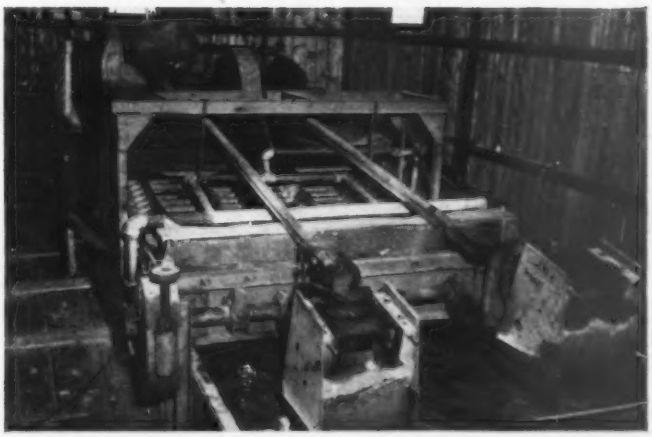


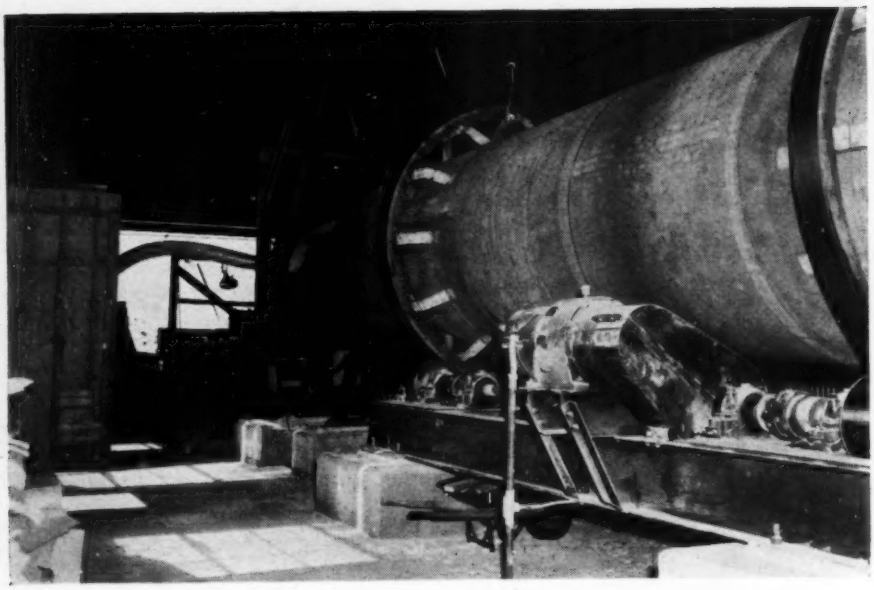
• Right: This 4-in. duplex diaphragm pump removes sand from the classifier tank.

• Below, left: Straight suction pumping is done with this 4-in. centrifugal, driven by a 60-hp. electric motor.

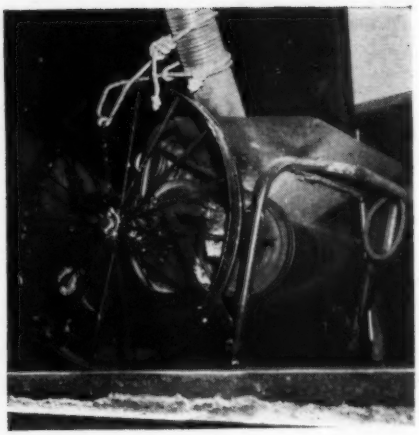
• Below, right: The rake classifier is 8 ft. wide by 28 ft. long. Fines which go over the weir are settled out in a classifier tank and pumped back.







• A view in the drying plant shows the 6- by 27-ft. oil-fired rotary dryer.



• Dry sand is loaded with this centrifugal loader and piler.

about 50 percent of the total output at Marion. Three men carry on this phase of the operation, including running the drag scraper and cleaning and papering cars. The man in charge of the dryer also carries out frequent fineness tests in a small laboratory located in the plant office. There is an 11-car siding available for loading dried sand.

Since it is impractical to run the dredge from around the 15th of December until the 1st of April, pumping operations are maintained on a two-shift basis during the summer and fall to build up a stockpile of 20,000 to 25,000 tons for winter shipments. The material is being used primarily as a basic grain in synthetic molding sands and cores, and most shipments go to foundries in the New England area. The product is identified by the company as Marion Washed Silica Sand, Damp and Dry.

Whitehead Brothers Company owns about 100 acres of property at the Marion location, and the material reserves are thought to be virtually unlimited. Christian Mathiesen is vice-president and general production manager; Corwin J. Passer is New England superintendent.

This pioneer enterprise in the field of industrial sands and foundry materials was established by Samuel Whitehead around 1841. Prior to that time virtually all sand used in foundry operations was brought in from overseas as ballast. Operations were originally confined to New Jersey, but have since been expanded to include properties in New York, Massachusetts, and Rhode Island.

Sales of Marion Sand are handled through the company's New England office at Providence, R. I. The New England sales manager is F. B. Clarke.

Washington News Letter

(*From page* 61)

Insofar as expenditures for new plant and equipment are concerned, the same mixed situation prevails, with some industrial groups expecting relatively small decreases and others expecting relatively small increases. In this connection, the S.E.C. survey showed that with respect to new plant and equipment, manufacturing planned to spend 13 percent less than in 1948; mining planned to spend 2.5 percent more than in 1948; railroads planned to spend 10 percent more than in 1948; other transportation planned to spend 7 percent less than in 1948; electric and gas utilities planned to spend 17 percent more than in 1948; and trade, service and finance and communications planned to spend 7 percent less than 1948.

It is clear from these facts that public utilities are likely to be very good customers. But if the conditions realized in other industries are anywhere close to plans and expectations, some will be slightly better customers and others slightly worse; but overall the situation is not expected to be very different in 1949 from what it was in 1948.

Taxes Again

The possibility of changes in the federal tax policy is rapidly diminishing. There is a general disposition on the part of the Congress to wait, both to see how the federal budget will come out and how the economic situation will develop. The size of the budget will be known in July, after which the Congress may consider a tax program.

While federal taxes were cut by the last session of Congress, the citizens' total tax burden over the last two years appears to have increased. Increases in state and local tax rates—real estate taxes, sales taxes, corporation taxes and income taxes—have more than offset the fall in federal income tax. Furthermore, many state and local legislative bodies are currently considering further tax increases. It is in times like these that the lack of a coordinated tax policy is most serious. Even if the federal government adopted a tax policy which would provide maximum incentive to continuing business prosperity, the effectiveness of its efforts could be seriously reduced or even wiped out by contradictory programs of other taxing authorities.

Mineral Problems Discussed By U. S. Mines Director

With only seven percent of the world's population, the United States uses 70 percent of all the oil produced on the globe and 50 percent of all the minerals, according to James Boyd, director of the U. S. Bureau of Mines.

In an address scheduled to be given before the Northeast Chapter of the Pennsylvania Society of Professional Engineers at Scranton, Pa., on May 14, Dr. Boyd pointed out a number of weak spots in the American minerals picture and outlined what is being done by government and industry to restore full economic security in this field.

"Despite our own increasing mineral output, our self-sufficiency in minerals is declining," Dr. Boyd stated. As an example of the rapid rate of increasing mineral production in this country, he noted that "we are today producing three times the *physical volume* of mineral commodities that we produced in 1910, the year Bureau was established."

Best Methods of Moistening Bulk Limestone for Spreading*

By M. L. DAKE
G.L.F. Soil Building Service, Ithaca, N. Y.

THE subject of this talk, *Moistening of Bulk Limestone for Spreading,* must sound heretical if not actually crazy, especially to those who produce ground or pulverized limestone and who, therefore, spend good, hard-earned money to remove moisture from your mill feed.

Under many conditions it is probably true that moistening is unnecessary. Under other conditions, such as in New York State, New Jersey and Northern Pennsylvania, the area we serve, where the limestone is predominantly as fine as 98 percent through a 20-mesh sieve and 50 percent through 100-mesh, where there is quite an urban population, and where farmsteads are relatively close together, we believe moistened bulk limestone is important for custom spreading.

In G.L.F. we started to explore the possibilities of custom lime spreading in about 1936 with roughly two objectives in mind; namely, (1) to implement a sound agronomy or agricultural conservation program and (2) to convert in so far as practical the money spent for paper bags either into a saving, where farmers would spread their own bulk limestone, or toward paying for the spreading job where custom service was wanted. This brief statement of history and objectives is mentioned only to provide perspective, because as a farmer owned and controlled co-operative, our job is less to sell commodities than it is to perform services in keeping with sound farming practices.

Early in our spreading experience it became evident that farmers preferred damp limestone for custom service because they wanted the lime uniformly applied on the fields of their choosing, not on the next farm, let alone in the next county. Further, they preferred to live in peace and amity with their neighbors and of necessity with their own households.

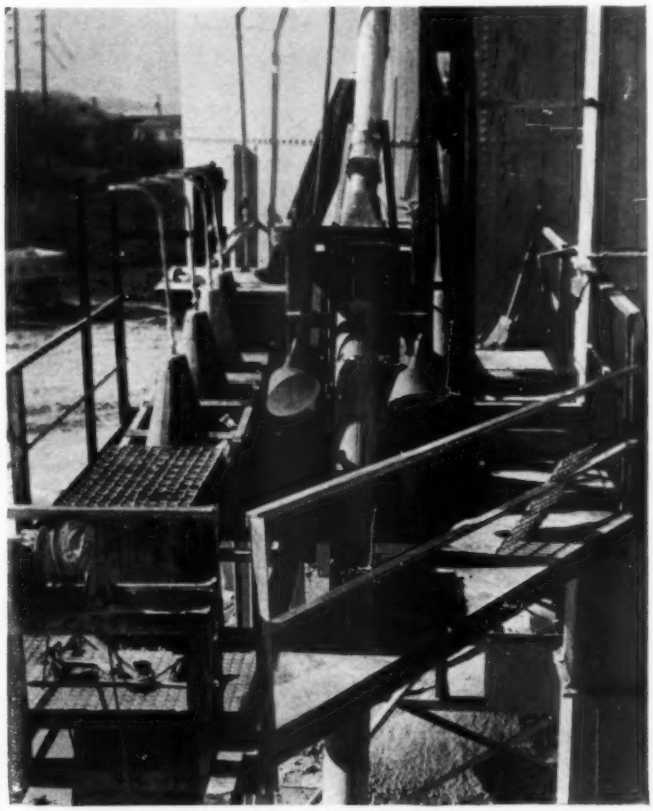
Notwithstanding the probably insignificant value of the dry limestone blown away, the fact remains that it is a loss to any one field, and it does create a bad psychological reaction to most people concerned.

We also observed that spreader operators showed a preference toward working with dampened limestone as compared to groping around the fields in a dry-limestone fog or trying to talk themselves out of dry cleaning bills with the local constabulary or worse. The operators, being human, like to work under the improved conditions provided by dampened limestone.

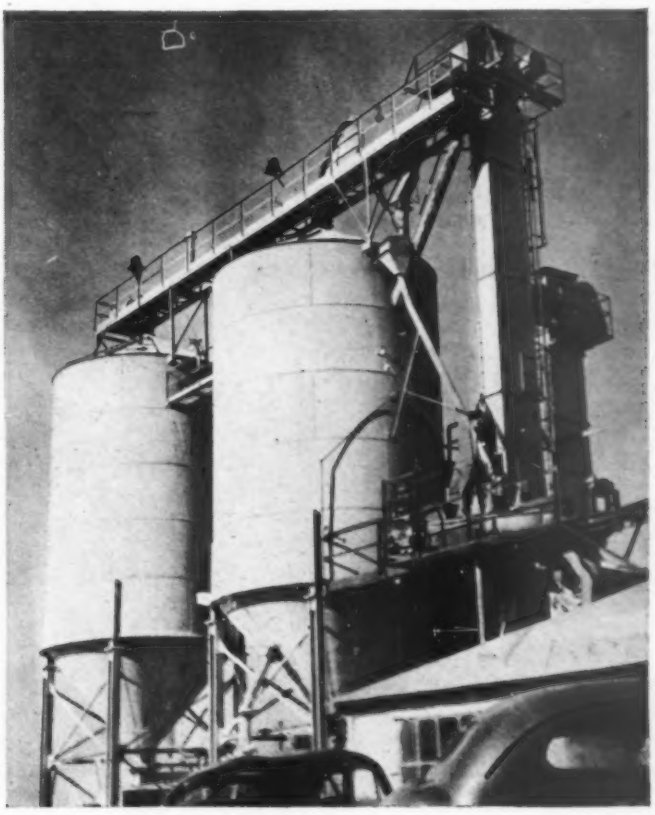
When it came to operation and maintenance of truck equipment, it proved impossible to exclude dry limestone from engines and gear cases, in spite of oil filters, oil bath air cleaners and any protective devices available. The dampened limestone does reduce maintenance and operational problems with truck equipment and conveyor engines.

So much for the farmer, the operator, and the equipment side of our observations. What about the producers' problems? After working for several years with an out-door, unprotected, stockpiled, damp pulverized limestone, it oc-

*Presented at the 1949 Annual Convention of the National Agricultural Limestone Assn., Washington, D. C.



• A modification of the Kent Stediflo mixer is used for moistening bulk limestone at the Conneaut, Ohio, plant of Michigan Limestone & Chemical Co. Spray water is introduced through the four cones located just above the mixer trough.



• Side view of the mixer shows its location with respect to the loading spout, elevator and storage bins.

curred to us that possibly too much care and too much cost was going into the storing and handling of the dry finished product. We reasoned that out-door stockpiling could accomplish at least part of the dampening under our average climatic conditions, and could under some producers' operating conditions effect a real saving in storage costs. It seemed to us that stockpiling could improve labor distribution and, therefore, improve labor relations by making possible a more uniform level of production; it could also provide an inventory of limestone adequate to meet peak season demand.

This line of reasoning seemed valid enough so that one of our good suppliers with a touch of pioneering spirit tried out first the out-door stockpiling of dry limestone and then stockpiling of predampened limestone, both with splendid success.

It appears that these four points: farmer preference, spreader operator preference, improved working conditions for equipment and favorable operating factors for the lime producer have real merit; and this year several of our sources of supply have installed equipment to provide dampened limestone in addition to their regular dry limestone. They are well along in their programs to stockpile out of doors, winter or summer, rain or shine, bagged business or no.

No doubt, the question is in some of your minds as to why we don't use the dry lime and fertilizer attachment type of spreader which is gaining in acceptance in some parts of the country. We have tried one make of this type of spreader, have observed others in use, and are as firmly convinced as ever of the superior merits of the double-fan type. Our preference is based on the following observations: (1) the quality of the spreading job of the double-fan type is at least equal to that of the dry-lime type in the hands of operators of equal ability, and is probably superior in the hands of a careless operator; (2) greater production is possible with the double-fan type; (3) the double-fan type is more compact and is fully as rugged; it lends itself favorably to the small, hilly fields and narrowgates and lanes so typical of much of our part of the country.

Even if the dry-lime type of spreader eliminated the dust problem, which it doesn't, and if it would do as good a job under all conditions and would spread at as high a rate as the double-fan type, there are still the advantages and inherent savings to many producers of dampening and stockpiling bulk limestone for custom spreading.

These questions quite naturally follow: (1) What do we mean by damp limestone? (2) How is the dampening accomplished?

Based on our experience, ground and pulverized limestone in ideal condition for spreading is one containing about 5 percent moisture as it comes from stockpile. With less moisture than this, dust will increase. With more moisture, the problems in spreading may increase. Dampened limestone from a stockpile usually has the advantage of more uniformity and has a friable or crumb-like structure that makes it excellent for spreading.

This past season we have enjoyed splendid success with both pulverized and ground limestone dampened in the flow from dry silo-storage or from the mill feed, through the mixer, then loaded direct into open-top hopper cars and into trucks. The success of this technique depends on the uniform incorporation and mixing of the limestone and water, plus, of course, a satisfactory rate of mixing to keep loading time to the minimum. The rapid loading and dispatching of trucks is of primary importance, not only in keeping truckers satisfied, and thus influencing costs and relationships, but in moving substantial tonnages because of the extremely seasonal nature of lime spreading in our territory.

While we consider 5 percent moisture quite ideal for custom spreading, we have spread since 1940 a substantial annual tonnage of a dolomitic pulverized limestone which contains as much as 12 percent water. With the proper equipment this limestone of higher water content spreads beautifully and presents problems only during continued below-freezing temperatures. This particular product is produced as a part of the washing of the stone from the quarry of one of our large sources and does not have the water added to a dry feed. I mention this because from our experience we would never recommend over 5 percent of water in the limestone in the spreader. In order to provide this 5 percent moisture content in the spreader, it is usually necessary to use an excess at the mixer if the limestone feed is hot and if it is to be shipped by rail. A 5 percent moisture content coming from the mixer when loaded into a transport or spreader truck for movement direct to the farm has given excellent results to date.

Dampening ground and pulverized limestone to provide a product with a uniform blend and with a controlled water content doesn't seem to be difficult of accomplishment, but it isn't so simple that it can be placed in the "garden hose—guess that's enough" class. We've tried the latter, and this sloppy technique isn't good.

A satisfactory mixing unit that has worked well at several of our sources of supply in 1948 is essentially a single-flight, paddle or pug-type mixer. A uniform feed of limestone and of water with variable control of the water is essential. A minimum capacity of one ton per minute has proven a good rate for loading trucks and cars. A greater capacity may be indicated to suit the needs of any one producer, but bear in mind that stockpiling is an integral part of the program as we visualize it and as we see it working out in actual practice.

Stockpiling from the mixer can be done in any of several ways: namely, with belt conveyor, dump truck, railroad car, crane and clam bucket, and bulldozer. The method will vary with facilities, yard space and the like and is not as important to the condition of the finished product as is the management of the stockpile itself. Experience indicates that a stockpile should be big—5000 tons and up—and should be kept dressed and well coned up.

Dry limestone presents some problems in out-door stockpiling and in blowing, and somewhat less in recovering. Dampening through a mixer or blender doesn't cure all these problems. However, the problems are made easier. Stockpiling of such dampened limestone with a crane and clam bucket is simple and relatively cheap when the volume is sufficiently large. Occasional hosing down of the pile, if needed, will lay the dust, which may be a nuisance during periods of high winds in hot weather. A clam or a Haiss-type loader does an excellent job of loading.

Cold weather operations presents problems resulting from freezing, but these vary in seriousness with each producer. Water-line freezing is the most common difficulty; and this is the best overcome by discontinuing the mixing operation during periods of continued cold weather. Experience over several years indicates that dry limestone stockpiled during cold weather usually picks up enough moisture

(*Continued on page* 92)

Two-Man Sand and Gravel Plant Does Efficient Job with Dredge

another ON THE SPOT report

A few miles south of La Porte, Ind., is a small but highly efficient 100-ton-per-hour sand and gravel plant which is operated under the name of George Lambert & Sons. Only two persons are needed to man this plant, one on the dredge and one on shore to load out the trucks.

By EDWARD BRUNENKANT

Before George Lambert built the plant here reported, the deposit had been worked by a contractor who supplied a nearby ordnance plant with sand and gravel during World War II. Where the contractor used a dragline, George Lambert has moved in with a dredge and is reworking the old location. The deposit runs about 35 ft. in depth with the overburden ranging between 4 and 18 ft.

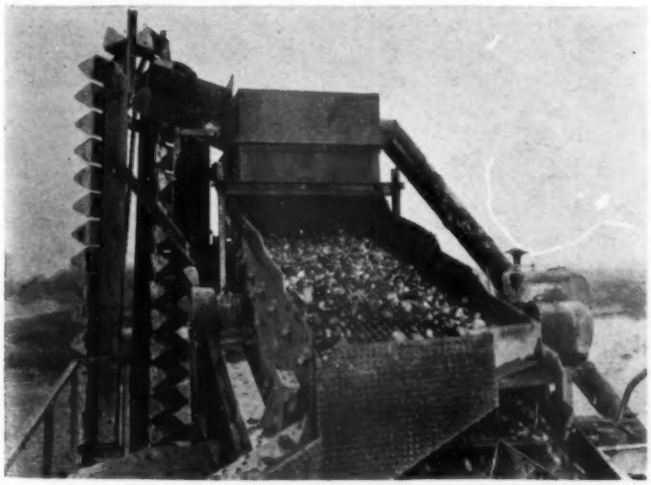
The barge is floated on surplus Navy pontoons which are really nothing more than 900-gallon steel tanks. Because the gravel is loose, there is no need for cutting ladders. On this barge installation, a new Caterpillar D8800 diesel engine drives a Hetherington & Berner pump fitted with a 10-in. intake and an 8-in. discharge pipe. A block-and-tackle arrangement lowers and raises the intake pipe. A piece of iron grating is set in the line in front of the

(*Continued on page* 92)

• Two partners of the firm of George Lambert & Sons. At the right is Mr. Lambert, who operates the plant described in these pages. Bruce Lambert (left) runs a second plant located on the same property.

• The barge which houses the pumping machinery is floated on surplus Navy pontoons. Sufficient negative pressure is created by the pump to suck up the gravel without cutting ladders.

• The barge operator throws the lever on the new diesel engine to cut in the pump, which is fitted with a 10-in. intake and an 8-in. discharge pipe.



• The top deck of this double-deck vibrating screen is split into two sections. One is fitted with ½-in. cloth, and the lower end is covered with 1¼-in. cloth.

• A general view of the Lambert plant, located a few miles south of LaPorte, Ind. Only one man is needed to run this end of the operation.

N. L. A. Holds Its Biggest and Best Convention at Hot Springs

By WALTER E. TRAUFFER

another ON THE SPOT report

THE 31st annual convention of the National Lime Association and the 47th annual meeting of the lime industry were held May 5, 6 and 7, 1949, at The Homestead, Hot Springs, Va. Like the last few preceding meetings, this one was an ideal combination of business and pleasure, with the emphasis on the latter. With the Operating Division of N.L.A. now holding a separate meeting each winter, at which technical and operating discussions predominate (see PIT AND QUARRY, December 1948, for a full description of the the meeting held November 4, 5 and 6 at the Palmer House, Chicago), it is possible to devote the time at the annual convention largely to other problems and subjects of interest to lime producers.

This policy has resulted in making the annual convention a must for the top executives and operating heads of the various member companies, and the emphasis on entertainment atracts each year a growing number of their wives and families. At this meeting the total registration was 109, including 35 ladies. Ample time is left each day so that those attending the meetings can get in a round of golf or can indulge in any of the many other forms of recreation which this outstanding resort hotel offers. Available to guests are two excellent and sporty golf courses, mineral spring baths, an indoor swimming pool, trap and skeet shooting, motor and carriage trips to scenic points, lawn bowling, tennis, stream trout fishing, etc. There are within the hotel stores where almost anything can be purchased which a vacationer might need. There is dancing nightly, with "bingo" parties on Wednesday and Sunday nights.

Robert S. Boynton, general manager of the association, with two top executives of the National Gypsum Co.—Melvin H. Baker, president (left); and John C. Best, vice president.

Miss Gladys L. McBee, pretty and capable secretary of the association.

The official entertainment program of the association began with a "bingo" party on Thursday night at which there were cash prizes as well as very tastefully selected special prizes for the ladies. The big event, however, was the reception and cocktail party on Friday night, followed by the annual banquet. The food and refreshments were, as usual, excellent, as was the dance orchestra provided for this occasion. The entertainment this time was exceptionally good, consisting of Doctor Giovanni, a "pickpocket" of high standing in the entertainment field. The "doctor" called up to the stage a number of the male guests, including Admiral William F. Halsey, and Melvin H. Baker, president of the National Gypsum Co. He then proceeded to abstract from their persons various items such as billfolds, pocket and wrist watches, keys, pens, etc., until his pockets were bulging, accompanying his performance with a steady flow of comment and sleight-of-hand tricks which distracted the attention of his victims and kept the audience in an uproar. His outstanding achievement was the removal of the suspenders of one well-known lime man who did not discover his loss until he returned to his seat, and who then refused to budge until they were returned to him at the end of the performance. The "doctor' was reported to be equally tricky on the golf course.

Officers and Directors The new president of the National Lime Assn. is Wallace E. Wing (Marblehead Lime Co., Chicago). Robert S. Boynton was re-elected general manager and treasurer. Miss Glady L. McBee is secretary.

William F. Halsey, Admiral U. S. Navy (retired), who was a speaker and honored guest.

The executive committee now consists of Wallace E. Wing (chairman); K. L. Hammond, Keystone Lime Works, Inc., Keystone, Ala.; Amos B. Miner, National Gypsum Co., Buffalo, N. Y.; Bolton L. Corson, G. & W. H. Corson, Inc., Plymouth Meeting, Pa.; Reed C. Bye, Warner Co., Philadelphia.

There were a few changes in the board of directors, which now consists of the following:

District 1. C. C. Loomis, New England Lime Co., Adams, Mass.

District 2. Bolton L. Corson; E. D. Williams, H. E. Millard Lime & Stone Co., Annville, Pa.

District 3. F. J. Collins Kelley Island Lime & Transport Co., Cleveland, O.; Amos B. Miner; and Reed C. Bye.

District 4. J. J. McInnis, Eagle Rock Lime Co., Eagle Rock, Va.

District 5A. W. W. Sprague, National Mortar & Supply Co., Pittsburgh, Fred Witmer, Ohio Hydrate & Supply Co., Woodville, O.

District 5B. Russell Rarey, Marble Cliff Quarries Co., Columbus O.

District 6. L. N. Carmouche Dow Chemical Co., Ludington, Mich.

District 7. Wallace E. Wing.

District 8. Michael Brisch Jr., Rockwell Lime Co., Chicago, Ill.

District 9. Henry LaLiberte, Cutler Wagner Co., Duluth, Minn.

Districts 10-11. K. L. Hammond.

District 12. Paul Sunderland, Ash Grove Lime & Portland Cement Co., Kansas City, Mo.

District 13. G. E. Robinson, Austin White Lime Co., Austin Tex.

District 14. P. H. McMillin, Roche Harbor Lime & Cement Co., Roche Harbor, Wash.

District 15. Kennedy Ellsworth, U. S. Lime Products Corp., Los Angeles, Calif.

Association Accomplishments S. Boynton, general manager and treasurer of the N.L.A., in his annual report of the accomplishments of the association during the past year said that the efforts to obtain percentage depletion are being continued and the outlook is favorable. He described three bulletins which were issued during the year on chemical lime and trade wastes and said that the book on lime handling, storage, etc., by Dr. Willem Rudolfs, will soon be ready. Another book containing 100 questions and answers on liming is being worked on in cooperation with five state agricultural research departments. Lime stabilization of soils, said Mr. Boynton, is becoming more popular and in addition to Texas is being practiced to some extent in Canada, California, Arkansas, Georgia, and elsewhere. Other states are interested. He described the work done with various other bodies, such as the A.S.T.M., on building codes, standards, specifications, etc.

1948 Safety Contest The report of the 1948 National Lime Assn. Safety Competition as presented by Miss Gladys L. McBee, secretary, follows:

"The Bureau of Mines is now working on its summary of lime safety statistics for 1948, but tentative figures indicate that 1948 will produce the best safety record of any year since the National Lime Association Safety Competitions were first started in 1935. The Bureau has verified the records of the following six plants which operated without a single lost-time injury:

"In the Quarry and Calcining Plant Group Working 100,000 or More Man-hours: Galloway (Mo.) plant of the Ash Grove Lime & Portland Cement Co. and Asbury, plant of the Standard Lime and Stone Co.

"In the Quarry nad Calcining Plant Group Working Less Than 100,000 Man-hours: Thomasville (Pa.) plant of The J. E. Baker Co. and Thomaston (Maine) plant of the Lawrence Portland Cement Co.

"In the Underground Mine and Calcining Plant Group: Bakerton (W. Va.) plant of the Standard Lime and Stone Co.

"In the Calcining Plant Group: Ludington (Mich.) plant of The Dow Chemical Co.

"To the employees of these six plants the National Lime Association is pleased to award certificates of honor.

"Of the 41 plants which enrolled in the Bureau of Mines Annual Competition for 1948, the 38 which competed in the N.L.A. monthly contest made an outstanding record. The December, 1948, Consolidated Accident Experience Report shows that they worked a total of 7,536,662 man-hours with an accident frequency rate of only 21.893 per million man-hours, as compared with 32.663 for 1947. This represents a really marked improvement—almost 50 percent better than the records for 1947 and for the 1935-47 average. A few open cases are still pending; so a final severity rate figure is not available, but indications are that it will be the lowest since these competitions were inaugurated. In this connection, the majority of these 38 plants have consistently reported year after year and though we like to feel the results are representative of the entire lime industry, continued efforts will be made to secure wider participation.

"Continued cooperation in safety work by a majority of lime manufacturers is encouraging, but aside from its importance from the economical and humanitarian viewpoints, safety is becoming a target of labor unions. With the possibilities of wage increases becoming more remote, recent indications are that labor unions plan to concentrate more on demands for safer working conditions. We strongly recommend enrollment in the Bureau of Mines Annual and N.L.A. Monthly Competitions, so that each lime manufacturer will have the most up-to-date information on his plant's safety achievements, as compared with the rest of the industry."

Life Member At this meeting the association officially awarded a life membership to Burton A. Ford (St. Regis Paper Co.) in honor of his long and devoted service to the industry. This is only the third such membership ever awarded. Mr. Ford began attending these meetings in 1922, when he joined the association and served as general manager until 1926. He then left to join the Valve Bag Co. (now the St. Regis Paper Co.), and he is now vice-president of the St. Regis Sales Corp., a subsidiary. Since then he has been an unofficial host at these meetings, holding open house for all those attending.

The Pacific Campaign The principal speaker at this convention was William F. Halsey, Admiral (Ret.), United States Navy, who held his audience spellbound through a 2-hour description of the naval operations against Japan from Pearl Harbor to the atom bomb and the final surrender. Told in a simple and modest manner, this epochal story has become an American saga and has already taken a high place in our national history. The man who told it and who played such an important part in it impressed us as being the type of military leader who can be developed only in a free country like ours. Of his outstanding ability as a naval tactician, strategist and leader of men, and of his personal bravery and integrity there can be no doubt. These attributes are combined with an absolute lack of conceit, a refreshing sense of humor, and an unassuming friendliness and humanity which endeared him to the men under his command and to those at this meeting.

Admiral Halsey was introduced as a football letter winner at Annapolis, who in 1934 took flight training at Pensacola, winning his pilot's wings at the age of 52. When Pearl Harbor plunged us into a two-front war, he ranked 41st in standing among naval personnel; five years later he was one of our most famous naval heroes. Born in New Jersey, he now lives in Charlottesville, Va.

It is impossible to attempt in this limited space to give even a sketchy outline of Admiral Halsey's story

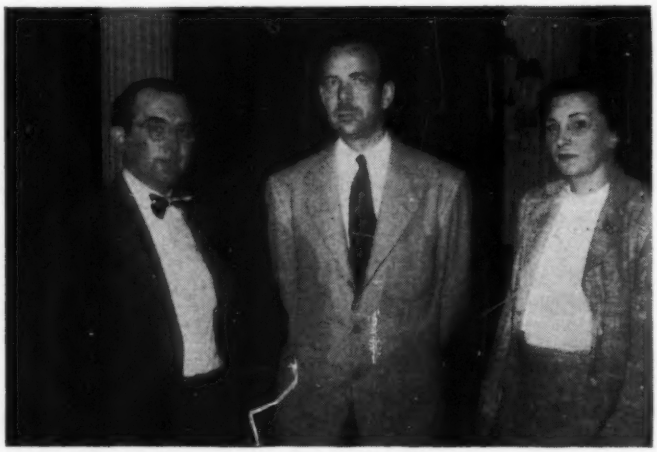
and the many setbacks and victories which led up to our final triumph. He told of the trip to Wake Island with 12 planes for the defense of that strategic but neglected base and of being 150 miles out of Pearl Harbor when it was attacked. He also described the Doolittle raid on Japan, Guadalcanal, which he called the turning point of the war, and the many other raids and engagements. He emphasized that the war was won by all forces combined and that the foot soldier was not the least important. An amusing sidelight was his commentary on the natives of a Pacific island, among whom there were many blonde women. These women, he said, believed that putting lime on their hair would prevent fertility; the rain, combined with the lime to bleach their hair.

Left to right: Prof. James A. Murray, Massachusetts Institute of Technology; J. H. Robinson, Gypsum, Lime & Alabastine, Canada, Ltd.; Philip L. Corson, G. & W. H. Corson, Inc.; and Irving Warner, Warner Co.

Natural Resources This meeting was honored also by one of the rare appearances of Melvin H. Baker, president of the National Gypsum Co., Buffalo, N.Y. In his discussion on *The Utilization of Natural Resources,* Mr. Baker described a natural resource as a raw material to the development of which human ingenuity and labor have been applied. This country is, he said, not outstandingly rich in such resources, but we do have the most important ones and we know how to use them. Lime is one of the five resources most important to industry, along with coal, iron, sulphur and salt, and who have all these in abundance. Lime, said Mr. Baker, is a sleeping giant now only slowly awakening. Lime was known to the ancients; but only in the past 50 years have production methods and applications really begun to develop. Limestone deposits are widespread, but the high-grade ones are scarce and rapidly being depleted in the face of industry requirements which are constantly becoming more exacting. The lime industry, he said, must conserve such deposits or the government will do it for them.

Another problem of the industry, said Mr. Baker, is the growing number of captive plants, and the industry can only combat this by producing a better lime cheaper than the users can make it themselves. New uses must be created, manufacturing methods must be improved, and a better selling job must be done. If the team of production, research and sales works together, he said, lime will sell on its own merits. Industrial production, he said, is now in a recession, and we must not permit the growing competition for business to bring back destructive business practices. We must also be open-minded to new developments and accept them at their face value; and we must do more research, especially of a fundamental nature. The Russians, said Mr. Baker, are reputed to be doing more pure and fundamental research on lime than any other nation. We must not let ourselves be outdone.

Basing Point Decision *The Legislative Aftermath of the Basing Point Decisions* was capably analyzed by Abram F. Myers, Counsel, Washington, D. C., who has been legal counsel of the association for over 15 years. He traced the history of price regulation in this country from the early code days into the FTC era. The word "price," he said, no longer means selling price to the user, but is now the manufacturers' net realization at the mill. According to Mr. Myers, a company can now be accused of conspiracy to fix prices even when no actual agreement is made with any other company. He held out some hope of relief to producers because of the possibility of the passage of bills which would provide a moratorium of action against alleged offenders until July 1, 1950, and would throw out the present doctrine of parallelism.



C. R. "Duke" Atherton stands between Mr. and Mrs. Michael Brisch, Jr., Rockwell Lime Co.

Lime in Paving A familiar figure at this and other conventions of the nonmetallic minerals industries was Bernard E. Gray, general manager of the Asphalt Institute, New York, who spoke on *Lime, an Important Material in Paving.* He expressed the opinion that the strength of this country lies largely in the possibility for free interchange of information, and that trade associations are a symbol of this freedom. He described the growing importance of lime in highway construction, chiefly through the stabilization of subgrades. With proper study and promotion, he declared, this outlet

Bernard E. Gray, general manager of the Asphalt Institute was on the program.

can become very important to the industry. A major future outlet is in the combined use of lime and asphalt in low-cost roads. The supplies of good aggregates are rapidly being depleted, and it is necessary to use the materials now available to the best possible advantage.

Clay gravels, stated Mr. Gray, are abundant, but vary widely in quality. We must learn more about them and their lime requirements in order to make a durable mix. In areas where no coarse aggregates are available the treatment of clay soils must be studied. The speaker also told of the tremendous potentialities of sand and gravel and crushed stone roads which can be given a permanent surface when stabilized with lime. This will be a bonanza, he said, if the appropriation for third-class roads is passed.

Lime and the Land *Lime and the Way of the Land* was the subject of an address by George D. Scarseth, director of research of the American Farm Research Assn., Lafayette, Ind. In selling good farming practices, Mr. Scarseth pointed out, lime is always a factor; and he advised that producers might benefit in this indirect way as well as in the direct selling of lime. Briefly sketching some of his experiences and researches with many kinds of soils and their varying needs for different types of fertilizers and agents, he stated that the basic need is nearly always for lime. The lime industry, said Mr. Scarseth in closing, is in the enviable position of having something to sell the farmer that is good for him.

Waste Acid Treatment One of the most important and promising outlets for lime at present is the treatment of all types of wastes. This subject is now receiving much public and legislative attention, and it seems evident that one of our major public nuisances will soon be abated. C. J. Lewis, tenichal director of the Warner Co., Philadelphia, presented at this meeting a very timely and instructive paper on *Some Practical Suggestions on Waste Acid Treatment.* In this address he explained a rather complicated and technical subject in a simple and understandable manner. The paper will be reprinted in full in an early issue of PIT AND QUARRY.

RESEARCH SESSION

The research session on the last day of the convention was presided over by Prof. Walter C. Voss, head of the Department of Building, Engineering and Construction, Massachusetts Institute of Technology. In his introductory address he declared that fundamental and applied research cannot be separated and that both are after some practical result. The only bad kind of research, he said, is that which first sets up conclusions and then tries to prove that they are right. According to Professor Voss, many researches are going on which are aimed at particular uses; but these need to be coordinated so that what is discovered in each will be of use to the others. There are also, he said, so many misinterpretations of the dry results of research that accurate interpretations of them should be made available to that they can be used to advantage by salesmen and others.

Visitors from Los Angeles—not Hollywood—were Mr. and Mrs. Kennedy Ellsworth, U. S. Lime Products Corp.

Lime Problems in Agriculture *The Lime Problems in Pennsylvania Agriculture and Steps Leading to Their Solution* were discussed by Dr. F. G. Merkle, professor of soils, Pennsylvania State College, State College, Pa. He warned that deserts are on the march, even in the Eastern part of our country, and that the best way to combat them is to deepen our topsoil as this increases the root range. Deep plowing usually fouls up good topsoil with toxic subsoil. Lime has a natural tendency to move downward in the soil and help create deeper top soil. Dr. Merkle described the wide variety of limes, agstones, methods of application, etc., which have proved that shallow liming cause the roots to spread out, while deep liming causes the roots to go much deeper to reach moisture even in dry weather.

In Pennsylvania, stated Dr. Merkle, all types of crops, from fruit to tobacco, need deeper topsoil; and a program for correcting the sub-

Seated are: Bob Boynton and the newly-elected president of N.L.A., Wallace E. Wing of the Marblehead Lime Co. Standing are, left to right: J. S. Offutt, U. S. Gypsum Co.; Russell G. Grieves, Kelly Island Lime & Transport Co.; Prof. Walter C. Voss, M.I.T.; L. John Minnick, G. & W. H. Corson, Inc.; C. C. Loomis, New England Lime Co.; and Prof. J. A. Murray, M.I.T.

Regular attendants at these meetings are: W. A. "Bill" Wilson, popular Eastern advertising manager of Pit and Quarry, and Roy F. Weston, Babcock & Wilcox Co.

soil would double the amount of lime used in that state. He described tests which proved that all types of liming materials, whether high calcium or high magnesium, raw, calcined or hydrated, gave about the same results when ground to a fineness of minus 100-mesh. He also stressed the importance of magnesium and some of the trace elements for various crops.

Research on Lime Stabilization A report on lime stabilization research at Purdue University was given by K. B. Woods, professor of highway engineering at the Lafayette, Ind., institution. He told of early investigations which showed that lime had little effect on the plasticity index of silty soils but much effect on clay soils, and that best results were obtained with hydrated lime. With slides he showed the results of tests on various soils with 0, 2 and 5 percent of lime. There was wide variation in results, but the best were obtained with 5 percent of lime, which was the highest concentration deemed economical. In closing, the speaker said that substandard base and sub-base materials may in some cases be improved in strength, plasticity index and water resistance. He recommended that tests should also be made on the results of freezing and thawing and of abrasion.

Fundamental Research A report on the fundamental research fellowship of the N.L.A. at the Massachusetts Institute of Technology was presented by James A. Murray, associate professor of materials at that institution. This speaker reported that two men have been working full time for the past year on two projects selected from 60 or 70 possible subjects. The first series of investigations was on the burning of pure calcite as this eliminated the effects of impurities which will be investigated later. Tests were conducted in a 1¼- by 36-in. rotary kiln electrically heated in a muffle. A rotary kiln was selected as it eliminated the necessity of grinding material after it was calcined. Temperatures of 1900, 2100, 2300 and 2500 deg. F. were used.

The second series of investigations was on slaking and a slaker was built in the laboratory. Slides were used to illustrate the construction of both machines. The kiln has thermocouples, a scoop feeder and a dust collector. The slaker has thermocouples and an electronic recorder.

It was found, said Prof. Murray, that lime calcined at 1900 deg. F. got its top heat rise in hydrating at six seconds. The other three temperatures successively resulted in slower hydration. It was also found that at any one temperature there was no particular change in activity with the time of retention in the kiln. However, it was discovered that overburning does reduce the activity of the lime; and it is expected that impurities will lower the temperature at which overburning takes place. According to Prof. Murray, there is a relationship between the activity coefficient and the porosity of the CaO; the porosity is more important than the surface area; and high porosity and high surface area go together.

Prof. Murray also described a high-temperature thermo-analyzer which was recently completed. Tests made of two New England dolomites showed some differences in the differential thermal analysis curves. This, he said, may throw some light on the action of lime in plasters, mortars, etc.

Burton A. Ford, St. Regis Paper Co., and the certificate of life membership awarded to him for long and devoted service to the association.

Other Papers Dr. William Rudolfs was unable to be present to present his report on sewage and trade wastes research at Rutgers University. John C. Thornton, architect, The Detroit Edison Co., Detroit, Mich., told of his *Experiences and Experiments with Lime Cement Mortar.*

Guiberson Lets Contract For $15,000,000 Cement Plant

"And that ain't all"—might well be said anent the famed Guiberson case, in which Samuel A. Guiberson Jr. of Dallas, Tex., won his long fight for the right to build a cement plant in the Palm Springs (Calif). area.

Mr. Guiberson, who heads the Whitewater Portland Cement Company, is going right ahead with plans for the construction of the $15,000,000 plant. A contract has been awarded the McNeil Construction Company for the erection of a plant at White Water, six miles west of Palm Springs. And the Guiberson saga goes on.

Plan $4,000,000 Cement Plant In Lewiston, Wash., Area

An announcement released by Thomas H. Palmer and William R. Bellows stated that a corporation of which they were officers will soon build a $4,000,000 portland cement plant at Lewiston, Wash. The plant, as yet unnamed, will manufacture 3000 bbls. of cement per day (said Mr. Palmer, who is secretary-treasurer of the Lewiston Area Development Associates. This organization is currently raising $50,000 for the purchase of a plant site. Mr. Bellows is financial agent and Wellman Clark is president of the association.

According to Mr. Palmer, the plant will consume about 900 tons of limestone, 90 tons of clay, 15 tons of iron ore, 30 tons of gypsum and 125 tons of coal. All raw materials except gypsum and coal will be obtained from local sources. It is expected that about 150 workers will be employed throughout the year. A ready market for the cement is anticipated in view of the large-scale public works construction programs, such as dams, slated for the Northwest area.

Rehearing Is Denied on Kansas Freight Rate Inquiry

The Kansas Supreme Court recently denied the state corporation commission a rehearing in its attempts to institute an investigation of Kansas cement freight rates.

The commission had sought a rehearing after the Supreme Court had affirmed a Shawnee County district court decision setting aside the commission's investigation order.

Mechanics, Techniques and Economics of Expanded Clay-Shale Aggregate Production

PART IV — GENERAL OBSERVATIONS ON THE ROTARY KILN

WOLF G. BAUER
Consulting Engineer

another P and Q exclusive

THE clay or shale burning and bloating process in this industry takes place almost exclusively in rotary type kilns, although under special conditions of raw material and fuel, sintering machines may be employed. The writer found this latter process to have been used in one of the European countries visited recently.

The rotary kiln, despite its usual thermal inefficiency and other drawbacks, is actually admirably adapted to the sintering and bloating process of gas-containing clays and shales, in which this treatment must bring the material up to the pyro-plastic state. This is due not only to the tendency of the rotary motion to nodulize and granulize the finer shale and clay particles into hard-shelled spheres, but it has proved to be in fact the only mechanism which can transport and mix the pyro-plastic and sticky material at higher temperatures with any type of fuel under fairly good control. The early use of the rotary kiln, therefore, was logical and correct, but the design and operation of such past and present kilns is still far from perfect and not in line with up-to-date practice and know-how as applied in other industries using such equipment. The justifications for such a statement will form a part of the discussion in this fourth article of the series.

KILN DESIGN FACTORS

The rotating cylinder has become an almost universal processing machine, its principle of operation being applied to conveying, screening, grinding, pelletizing, cooling, drying, scrubbing and washing, calcining, sintering, and even burning and gasifying of fuels. In each case, the same variables of cylinder shape, diameter, length, slope, and interior constrictions determine the effect upon the application and process for which it is used. When employed for heat exchange work, as in the heating or cooling of materials, the variables of heat transfer by radiation, conduction, and convection are superimposed upon those of a purely mechanical nature mentioned earlier.

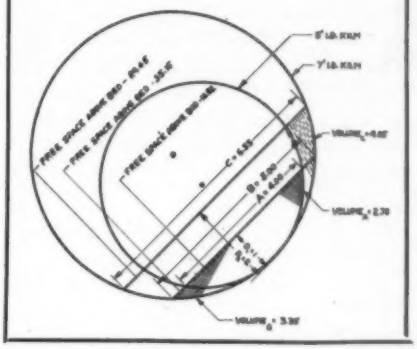
In designing a rotary kiln heating system, three design aims must be fulfilled: (1) the system must be designed to best fit the particular material processing requirements; (2) this must be accomplished with a good thermal and mechanical efficiency; and (3) the output of the plant per investment must be high.

In designing a rotary kiln burning system that will fulfill our first requirement, namely process adaption, physical as well as chemical behavior of the material must be analysed from many angles and under simulative commercial processing conditions. This may seem a superfluous statement, too obvious, on the face, to bear mentioning; yet how many installations have failed in this prerequisite of equipment planning.

Some of the physical and chemical properties of clays and shales, as they are influenced by heating, were discussed in earlier chapters. When laboratory or pilot kiln tests have given us the optimum heating rates, holding temperatures and time, influence of kiln atmosphere, best kiln feed size and size ratios, spalling resistance under sudden thermal shock at various moisture contents, attrition under various bed depths and mixing speeds, etc., a basis of kiln design is made available. This knowledge and data must then be evaluated in the light of practical experience under commercial conditions before process designs and arrangements can be drawn up.

Shortcomings of Present Installations What are the common faults of most older clay-shale expansion kilns and arrangements and also many of the present new crop? Many of the shortcomings are due to the singular practice of simply copying older installations, designs, and practices, which in turn originated in other industries and are therefore not particularly optimum for the peculiar conditions obtaining in this field. So we find these more or less crude kilns with fair-to-poor fuel ratios, little control of material quality, and other conditions which unbalance the process and produce a product from which it is difficult to recuperate the valuable sensible heat. Such a product must be excessively crushed finally to produce an open-structure aggregate that has lost the protective sealing and strengthening feature of steel-hard fire-coated skins or hulls surrounding each particle down to the smallest size. In referring to this latter case, the clinker product should be very close to actual size range as used in concrete, so that the tough and more or less impervious skin or shell of the bloated particles remains intact.

FIG. 1



At least 50 percent of the sensible heat in the kiln discharge should be recovered and added to the heat of combustion. It is obvious that the production of agglomerated particles in the form of balls presents not only problems in handling, crushing, and burning, but also in heat recovery on a continuous basis. To all who have studied and worked in the elimination of rotary kiln ring formation with these materials, it is equally obvious that this condition brings about much lost production due to the unbalancing of material flow and combustion within the kiln. Again, the use of natural draft versus mechanical draft indicates that little thought has been given to relative fuel and power economics and to process control.

Relationships of kiln diameter to length, process zones and type of heat exchange required in each are factors which seem to have received scant attention, if some of the short, slow-turning, and constant-diameter shells in operation can be made the basis of judgment. Especially regrettable is the universal use of kilns with a small length-to-diameter ratio, low-peripheral speed, and steep pitch, when from the standpoint of tests, as well as commercial

practice, the exact opposite practice —namely longer kilns set at minimum pitch and turning at high peripheral speeds—is indicated for more efficient operating conditions.

Again, in the matter of burning fuel, the sensitivity of the process arising from the usual short range of bloating temperatures with such clays and shales makes it imperative that more than usual pains be taken to design for optimum flame and atmospheric conditions in certain parts of the kiln. Each fuel presents its own problems, but all can be made adaptive not only for temperatures that are safe, best for the material, and likely to cause the least trouble with ring formations and sticking of material.

In the matter of process control, effort must be especially directed toward elimination of controllable variables such as fluctuations in quantities of primary and secondary air; size gradation or fines content of raw material due to weather, crushing, bin segregation, etc.; B.t.u. input influenced by moisture, temperature, size, and pressure of the various types of fuels. All this means correctly-installed measuring elements or automatic regulation in all but the final process control and adjustments through flame or kiln speed manipulation by the fireman.

Mechanical Factors of Kiln Capacity The well-known Bureau of Mines equation $T = \frac{1.77\,L\,\theta^{\frac{1}{2}}}{PDN}$, in which T = time of material travel in minutes, L = length of kiln in feet, D = inside lining diameter in feet, P = pitch in degrees, N = revolutions per minute, and θ = the angle of material repose in degrees, gives the various relationships of material traveling through rotating cylinders without obstructions, and which influence kiln throughput. However, kiln "throughput" is a mechanical relationship, and does not imply kiln "output," the latter being a function of B.t.u. input, heat transfer rate, and time-temperature requirements of the particular material. In processes such as lime, magnesite, dolomite, and even cement burning, the formula $C = \frac{KD^2L}{100}$ is sometimes used for approximating kiln capacity for a particular process, where C = capacity in tons per day, D = shell diameter in feet. L = length in feet, and K = the output factor for the particular material and kiln combination.

While this output equation may be useful in obtaining a rough estimate of kiln capacity for more familiar processes in which thermal efficiency is pretty well established, the writer has been unable to apply even a modified equation with several additional constants to about a dozen clay bloating kilns. One of the reasons for this arises from the apparent indiscriminate choice or design of present operating kilns of all lengths and diameters, irrespective of the natural variations in clay vitrification temperatures, raw material moisture, or time element for optimum drying, calcining, and bloating.

Only when a small number of the more or less standard haydite kilns are applied to the formula, can the output of these kilns be made to agree in a rough manner. Thus, for these cases, the equation may be written $C = .07D^2L$, where C is the kiln output in yards of clinker per day. However, as soon as the usual shape ratio of $\frac{L}{D} = 8$ to 10 is less, or is exceeded, the formula does not apply. As we apply more correctly designed kilns with dryers and pre-heater, as well as cooler provisions for overall maximum output and heat efficiency, formulae embracing other variables of temperature and time, moisture content, and material classification can be set up for estimation purposes in this industry. Shape ratios of 12 kilns in operation vary now from 6 to 17, and kiln volume in cubic feet per yard of aggregate produced ranges from 7½ to 12. There is insufficient process data to correlate kiln performance to kiln volume or shape ratios.

THERMAL KILN CAPACITY FACTORS

It is evident then, that several other constants must be added to the foregoing formula to cover kiln dimension ratios and moisture content of material, as a clay bloating kiln is actually a combination clay heater and waste heat dryer. The length and shape and the resulting efficiency of this integral or separate dryer plays a large role in kiln output.

Heat Requirements In determining heating requirements, the mean specific heat of the clay or shale on the air-dried basis must be established. This depends upon its composition, but it is most markedly influenced by the percentage of the chemical water or water-of-hydration of the clay-minerals present. In assuming, for instance, that the shale or clay contains 8 percent molecular water which must be heated to 900 deg. F., one may be justified in using a value of 0.31 for the mean specific heat of the dry material. An average shale heated to 2300 deg. F. maximum would then require 2250x0.31=700 B.t.u./lb. clinker, heat losses disregarded. Any additional heat required to dissociate carbonates, sulphates, hydrates, as well as heats of fusion for any eutectic mixtures, may be overlooked in most cases, as certain oxidation reactions of sulphur, carbon, and iron, as well as mullite formation, are exothermic, and so tend to cancel out the former.

Role of Moisture If the shale contained 15 percent moisture (mechanical) on a wet basis, or about 18 percent clinker basis, it would require (0.18x1x150)+(0.18x1x790)=170 b.t.u./lb. clinker to drive off this water. With plastic clays this may (theoretically) reach about 350 B.t.u., or half as much again as the clay heating requirement. (We say theoretically, because the time factor and surface factor in plastic clay drying are indeterminates of great variation, leading to empirical evaluations.) These heat requirements are thus seen to become critical factors in kiln capacity.

Inasmuch as this moisture must be removed by convection, and its removal rate is therefore dependent upon both drying-gas velocity as well as gas humidity at exhaust temperatures, the design of this vital drying section of the kiln, or the separate installation of a dryer-preheater becomes an item to be reckoned with in pre-determinations of kiln production rate. As will be shown later, the so-called "unavoidable" waste heat of high elevation, *i. e.*, above 900 deg. F. in this case, escaping from the clay calcining zone, is ample to dry almost any common moisture found in these materials. If the equipment and arrangement is therefore designed correctly, moisture content will not materially reduce the capacity or even the efficiency of the installation.

Draft Factors Without further modifications to the statement, kiln output is directly proportional to fuel input,

which in turn is a function of secondary air supply rate to the combustion zone. Within certain limits, this is true. Either a stack or an exhaust fan may be used for inducing draft or combustion-air moving. These devices must pull 11 tons, 15 tons, and 20 tons of air through the kiln for every respective ton of coal, oil, or natural gas consumed. For this reason their capacity to move air against kiln resistance directly determines the quantity of fuel that may be burned in the kiln at any time.

Since we know that stack draft is based on the differential weight of a column of hot gases inside a stack to an equivalent column of air at the existing outside temperature, the power of a stack is both a function of its height as well as its *average* temperature. We can increase stack power in three ways, by raising its height, by lessening gas friction, or by increasing the mean temperature within the stack through insulation and prevention of cold air leakages. Beyond a certain point, insulation and stack diameter and height become a major investment. In the case of exhaust fans, power is consumed as required, and draft can be increased through higher rotational fan speeds.

The significant fact to keep in mind in connection with kiln capacity and stack draft, is that stack power is dependent upon gas temperature. In a process where moisture evaporation reduces available exhaust gas temperatures and at the same time adds significant volumes of vapor, air and gas-moving power produced by natural means are definitely limited just when most needed. For the same reason, when moisture requires more fuel to hold production at a constant level, the stack is unable to overcome the increased friction of the additional gases at the same temperature. For reasons of dust control or collection, clinker and combustion control, and lower overhead costs due to possibilities for increasing kiln capacity, artificial or mechanical means of draft production are definitely superior to natural draft in processing clays and shales of medium to high moisture content.

Heat Exchange Factors Aside from the aforementioned factors influencing kiln output, efficient heat absorption of the charge in the kiln-dryer and of air in the cooler is paramount. It may be possible to burn sufficient fuel in a given kiln for, let us say, a 250-yd.-per day production; but if the heat release is concentrated in a short zone, the resulting temperature not only would give rise to refractory troubles, but the ratio of material bed volume to free kiln space volume would have to be so high as to require unreasonable material kiln retention time. To state this in another way, maximum possible process temperatures are more or less fixed by the material; and if increased capacity is desired, an increase in fuel input must be followed by an equivalent increase in material heat absorption area. In still other words, the ratio of heat release per material area must remain within a fairly narrow range, or smooth operation is disturbed.

Material heat absorption area can be increased in the case of the bed surface area by increasing the bed depth, or by causing the flames to cover a larger or rather longer kiln area. In the case of individual particle area exposed to radiant or convection heat, the increased mixing and exposure or re-appearance rate of higher rotational kiln speeds (in conjunction with decreased kiln pitch) is the best expedient. From a study of Figure 1, it is at once apparent that the ratio of bed surface area (equivalent to chords A, B, or C) to bed depth decreases as the depth of bed increases. This indicates that an increase in bed depth or material volume does not create an equivalent or proportional increase in heat absorption area. The discrepancy must therefore be made up in additional flame length. This can readily be done with most fuels, but at a slight decrease in efficiency.

In this matter of heat transfer, the ratio of free kiln space volume to material volume or kiln load is also of significance. The limiting factors to deep material beds are economic particle-size range, attrition, and heat penetration to bed center. When large percentages of fines make up the kiln feed, these fines will inhibit rolling and mixing of larger particles, and will tend to screen them from the heat. When an excessive amount is used, fines will cause surging and sliding of the charge. When fines fill only the natural void spaces between the larger pieces, they tend to filter through the coarser, and generally remain in the center or core of the bed, thus being shielded from radiation by the larger ones. All these conditions adversely affect capacity and the uniformity of finished clinker. Narrow size range of particles will allow deeper beds to be carried. The writer has found that this applies to many different materials treated by radiant and convection heat in rotary kilns. Since the combustion space of rotary kilns is, in most cases, more than ample for the necessary space heat release, deeper beds under favorable conditions can well be tolerated for higher capacity. The word "favorable" is conditional, however, and three provisions must be made: peripheral kiln speed must be high; the material must contain a minimum of fines; and the clay or shale must not reduce itself unduly by attrition.

Due to such limitations on bed depth, both large and small diameter kilns must be operated at nearly equal depths if the material is the same kind in each case. Since this is a point often overlooked, Figure 1 was drawn up to show the great differences in the ratio of free space above bed-to-bed volume and surface in two kilns of a diameter range employed by the industry. In comparing these relationships of relative areas in two kilns, one 5 ft. I.D., the other 7 ft. I.D., one begins to realize how little bed surface area is gained in the larger diameter kiln, but how much more heat loss from uncovered lining for equal kiln loads. If the large kiln is to possess the ratio of bed surface (flame heat absorption area) to free kiln space volume, the 7-ft. diameter kiln would have to be operated with a bed of twice the depth. It is obvious that such bed depth would result in incomplete heating, as well as a required increase in time for processing, if that were possible.

Since to our astonishment we find kilns in this industry that range in shape ratio from 7 to 10, so that 6-ft. and 8-ft. shells are equal in length at separate plants (using similar materials), we are justified in making further comparisons. Using for purposes of illustration the two equal length kilns of 5-ft. and 7-ft. inside diameters again, it would appear that there are a number of points in favor of the smaller-diameter kiln. First of all, there is very little difference in bed volume for equal bed height or depth (which is a limiting consideration as discussed previously) in the two kilns, the ratio being $\frac{3.35}{2.78}$ or 1 : 1.2. For the same heat release per combustion space,

the large kiln would have a flame-filled combustion zone of half the length of the smaller kiln, which would result in about half the bed heat absorbing surface for radiation. Since the secondary air and combustion gases would travel at ½ the velocity in the larger kiln under this condition, it would not only be more difficult to lengthen the flame to that which would obtain in the smaller kiln, but the heat transfer by convection in the drying section is much reduced due to lower gas scrubbing effect. Drying speed is also reduced due to the tendency of gas stratification and poorer mixing in the larger kiln. (Gas analyses taken at various points in kiln feed ends indicate that much higher humidity and somewhat lower temperatures exist in the gas stream directly over the bed than in higher portions and toward the down-turning side of the kiln.) Again, if flame were lengthened in the larger kiln to cover the same bed area, radiant heat transfer, being a square function of the distance to the absorbing surface, would be somewhat less in the larger kiln, while at the same time the bare lining absorption and heat loss would be greater by a ratio of $\frac{16.9}{11.7}$ or 1.45. If the bed surface area to kiln free space is made the same for each kiln, the bed volume and bed depth would be about double for the larger kiln. If, on the other hand, the important bed depth is made the same for both kilns, the free space volume above the bed is 1.75 as large in the 7-ft. I.D. kiln as in the 5-ft. one.

In drawing our conclusions from this analysis, as well as from heat balances and operation factors of many rotaries studied in this and other industries, it appears now that the usual short expanded-clay and shale processing kiln of small diameter has not only too low a shape (length to diameter) ratio, but is also rotated much too slowly, and fired with too short a flame—all detrimental to output, ease of operation, product quality, and fuel efficiency.

In the next chapter we will discuss the factors that make for good fuel efficiency and general heat economy, and also the steps to be taken to increase output of existing kilns. Elements of optimum kiln-cooler-preheater design, as they apply to dry shale and wet clay, will be presented.

Labor Developments

(*From page* 75)

with the Department of Labor and have distributed these statements to its members.

Employers are expecting difficulty from this ruling. They are particularly concerned where they have one plan covering workers represented by different unions. Each of the unions may want a different change in the plan. Few plans, they say, could stand that kind of tinkering. On the other hand, employers may be faced with demands for the adoption of union-wide plans. Employees belonging to one union would then have different pension rights from those belonging to another union. They fear that this will create internal inequities which will have a serious effect on stable labor relations. Finally, they are concerned that pension plans now will become subject to annual revision. Pension plans, by their nature, are long-term arrangements and are financed accordingly. Frequent revision would raise serious financing problems.

On the other hand, unions point out that their newly-enforced right to bargain about pension plans will not be abused if for no other reason than that their members have most to lose if the efficacy of a pension plan is destroyed. While they will press for more liberal plans, they say that it would be foolhardy for them to press such demands to the point of bankruptcy.

Must Bargain on Terms Not Covered by Contract

Employers who believe their collective bargaining is over for a year when they sign a union contract are due for a rude awakening, if a recent ruling of a National Labor Relations Board Trial examiner is upheld by the Board. When a union sought to bargain about a pension plan in the middle of a contract year, the employer refused on the ground that he did not have to bargain during the life of the contract. The trial examiner found, however, that pension plans were not covered by the contract. It was true that the employer did not have to bargain about the terms contained in the contract for its duration, but he was required at all times to bargain about other matters.

This raises some important questions about contract drafting. Very frequently in negotiations certain union demands are traded off for certain employer concessions. Unless the abandoned union demands are specifically covered in the contract, the union can present the demands again as soon as the contract is signed, and the employer is required to bargain on them.

Olson and Newport Concerns Purchase Sand-Gravel Plant

Pendleton, Ore., is the site of a new industry, the Pendleton Sand & Gravel Co., which has begun operation near the Umatilla River. The business was purchased by Russell Olson and the Newport Construction Company from Norris Looney, who formerly operated two plants in the vicinity.

Production is expected to reach 100 cu. yds. per hour when all equipment has been set up and full capacity has been attained. The operations of the Pendleton Sand & Gravel Co. will be in addition to these at the Newport Construction Co. and the Russell Olson Construction Co., both of which will continue separate operations as in the past.

Stony Point Quarry Corp. Sold to Krudwig and Boswell

Stony Point Quarry Corporation, which formerly owned and operated a quarry near Phillipsburg, Mo., has been sold to Ward Krudwig and J. P. Boswell, both of Lebanon, Mo. It will now be operated by a corporation, to be known as the Rock Point Quarry.

Former officers and stockholders of the concern were Robert Price, president; H. E. Ferrier, vice-president; and Mrs. Robert Price.

The new owners announced that production would be resumed at once in the quarry, which had been shut down last winter. Products will include agricultural limestone, chats, and crushed stone.

Thomas A. Edison Co-Designer Of First Robins Conveyor

Harold Von Thaden, vice-president and general manager of Robins Engineers Division, Hewitt-Robins Incorporated, was one of the speakers addressing those attending the fourth annual Time Study and Methods Conference, a meeting sponsored jointly by the Society for Advancement of Management and the Management Division of The American Society of Mechanical Engineers at New York on April 22.

Mr. Von Thaden's address was entitled *Belt Conveyers—Their Performance and Their Promise.* An interesting fact brought out in the talk was the information that the modern troughed rubber belt conveyor was designed by Thomas Robins, Sr., founder of Hewitt-Robins, in collaboration with Thomas A. Edison. Their first belt was constructed 58 years ago to handle iron ore from old, worked-over New Jersey mines.

Action on Truck Size Restrictions Slowed by Many Factors

By BETHUNE JONES

A TREND toward liberalization of state truck size and weight restrictons, although continuing to make progress, has been proceeding in 1949 legislatures throughout the country at a slower rate than in other postwar years.

A survey discloses that such measures by mid-April had been enacted into law in four states—Idaho, Indiana, Washington and Wyomng; awaiting gubernatorial action in Maryland; vetoed in Nevada; killed in five states—Arizona, Montana, North Dakota, Oregon and Tennessee; and pending in eight states —California, Iowa, Missouri, Nebraska, New Hampshire, North Carolina, Ohio and Pennsylvania.

In contrast to the record thus far this year, truck restrictions were liberalized by at least 18 states in 1947, the last heavy year of state legislative activity, and by four states last year, when comparatively few state legislatures convened.

The slower pace of such legslation this year is due partially to the fact that since the war many states had already acted to liberalize truck size and weight limits; but it also reflects stiffened opposition to efforts to bring highways to their maximum economic usefulness. Railroads, seeking to curb competition from highway transportation, have been sparkng this opposition in most instances, although in some states it has come from highway officials questioning the ability of present highways to carry increased loads.

Most significant of the new enactments is Indiana's new law, which increases the permissible gross weight limit from 50,400 lbs. to 72,000 and otherwise liberalizes truck size and weight restrictions. Height limitations are increased from 12 ft. to 12 ft. 6 in., with automobile transports allowed a maximum height of 13 ft. 6 in. when loaded. Permissible lengths of combination truck units is increased from 40 to 50 ft.

The Indiana measure authorizes the state highway commission to designate certain highways as heavy-duty routes, over which increased axle loads wth the 72,000-lb. gross limit may be carried, with the commission fixing the maximum loads which may be transported on such highways. A maximum single axle weight of 22,400 lbs. may be allowed by the commission over highways which may be desgnated as able to carry the addtional weight, and a maximum of 18,000 lbs. is set for each axle on tandem assembly. On all other highways the limit is 18,000 lbs. per single axle and 16,000 lbs. on each axle of a tandem assembly. The new act replaces the previous formula of 700 (L plus 40).

When the Indiana commission moves to designate heavy-duty highways over which the increased loads may be carried—a step not expected to be taken in the immediate future —Indiana will have weight limits comparable to its neighboring states, and a major highway transportation barrier will be removed. Meanwhile, Indiana is launching a strict enforcement program to curb truck overloading, with the new legislation providing greatly stiffened penalties. Higher truck registration fees also were enacted by the Indiana legislature.

Idaho's legislature enacted legislation increasing the maximum gross weight for combinations of units from 68,000 to 72,000 lbs. The latter maximums will be applicable for combinations on which distance between first and last axles is 55 ft. or more. Under the old law the 68,000-lb. limit applied to combinations of more than four axles.

A new Washington state law raised from 35 to 40 ft. the overall permissible length of any vehicle in a combination of vehicles and increased the gross weight limit for any truck or truck tractor having two axles from 26,000 to 28,000 lbs. The new law makes illegal the operation of any vehicle two axles of which are spaced less than 7 ft. apart unless both axles are so constructed and mounted as to permit oscillation between them and provided that either of the two axles wll not at any time carry more than the maximum gross weight allowed for one of two axles, as specified in a subsection. The act also establishes a gross weight tolerance for vehicles and combinations based on axle distance, and revises the schedule of overweight fees.

Wyoming's legislature enacted a law eliminating the state's former formula of 850 (L plus 30) and substituting a table of weights based on axle spacing graduated from 32,000 lbs., if axles are spaced 4 ft. apart, to 73,950 lbs. if the spacing is 57 ft.

Passed by the Maryland legislature and at this writing awaiting action by Governor Lane is a bill which would revise the state's weight formula in such a way as to increase the allowable gross weight for the longest trucks and truck-trailer combinations from 67,500 lbs. to 90,000 lbs. The bill would be advantageous mainly to operators of fleets of trucks which mix concrete in transit. The present Maryland formula limits them to 42,750 lbs. gross weight, as against 57,000, which would be permitted by the new legislation.

Under present Maryland law the weight formula is the length of the truck from the center of the front axle to the center of the rear axle plus 40, and the sum multiplied by 750. The bill approved by the legislature would multiply the sum by 1,000. Opposition to the measure was expressed by federal, state and city officials and the Maryland unit of the American Automobile Association.

Nevada lawmakers approved a bill which would have authorized vehicles up to 8½ ft. in width, but it was vetoed by Governor Vail Pittman as "premature and impractical." Most present highways of Nevada and neighboring states are incapable of handling vehicles of such width, he declared. Maximum allowable width on Nevada highways now is 8 ft.

Truck size and weight bills still pending at this writing included the following:

California—To allow semi-trailers up to a length of 45 ft.

Iowa—To increase maximum length of truck trailer combinations and to permit the use of full trailers. Maximum overall length of a tractor and semi-trailer would be increased from 45 to 50 ft., while the maximum length for other combinations would be set at 60 ft., and the maximum length for other combinations at 60 ft. Iowa law now limits any combination to 45 ft. and prohibits full trailers. The proposed legislation also would add the increased permissible length to a tabulation of gross weights permitted on the basis

ot distance between axles. Maximum load per axle would remain at 18,000 lbs.

Missouri—To permit 32,000 lbs. tandem axle load, as compared with the present permissible 28,600. The measure would not change the present allowable gross vehicle weight of 56,000 lbs.

Nebraska—To increase maximum length of combinations from 50 to 60 ft.

New Hampshire — To increase gross weight limit for trailer and semi-trailer trucks from 47,500 to 50,000 lbs.; to increase the gross weight of two-axle trucks from 30,000 to 35,000 lbs.; and to set a height limit of 13½ ft.

North Carolina—To provide for the establishment of a "heavy-duty highway system" and to raise weight limits as follows: Vehicles with wheels equipped with low-pressure pneumatic tires, from 9,000 to 10,000 lbs.; vehicles having two axles, from 26,000 to 30,000 lbs.; vehicle or combination of vehicles having three axles, from 40,000 to 48,000 lbs., and vehicle or combination having four or more axles, from 50,000 to 64,000 lbs. Operation of xehicles with axle loads over 18,000 lbs. would be restricted to highways designated as "heavy-duty" by the State Highway and Public Works Commission.

Ohio—To permit a one-ton-an-axle increase in the maximum weight of vehicles and to allow the state highway director to designate "heavy-duty" highways and maximum weights permitted on them.

Pennsylvania—To increase allowable gross weight for a tractor semi-trailer from 45,000 to 50,000 lbs., permit a tractor and tandem axle semi-trailer weight to go as high as the 62,000 lbs. now allowed for truck and full trailer combination, and raise the single axle weight restriction from 20,000 to 22,400 lbs.

Truck size and weight bills defeated by legislatures this year included the following:

Arizona—To abolish a formula of 800 (L plus 40) and substitute a table of weights based on axle spacing graduated from 33,000 lbs. if spacing is 4 ft., to 83,450 lbs. if spacing is 57 ft.

Montana—To increase the maximum axle load from 18,000 to 22,000 lbs.

North Dakota—To increase width by half a foot, height by a foot, length for a truck-trailer combination from 50 to 60 ft., and the maximum weight from 60,000 lbs. to over 70,000.

Oregon—To increase length of single-chassis vehicles from 36 to 40 ft.

Tennessee—To increase weight limits from 42,000 to 54,600 lbs.

Moistening Limestone

(*From page* 80)

from normal precipitation to be in fair condition. Care exercised in loading from stockpile, such as blending of too dry and too damp material by the loading operator in the pile before shipping, will take care of most conditions except those in which the limestone is actually soggy and sticky. Such "gooey" material accumulates chiefly at the base of the pile and may be cast aside or left in place to dry out later.

Freezing of the stockpile will vary, of course, with weather conditions and with moisture content. As surprising as it may seem, there is hardly a year that we don't spread some stockpiled bulk limestone during each of the winter months. In fact, since last winter was quite free from snow over most of our territory, some spreading was done by the hardier, more rugged operators.

Most farmers realize the value of limestone in crop production and soil management and will use more limestone as they are able more readily to obtain satisfactory spreading service. It appears that dampened limestone used in connection with bulk stockpiling is a long step in the right direction.

Two-Man Setup

(*From page* 81)

pump so as to stop the larger boulders which might damage the impeller blades of the pump. When the stone box below the grating is filled up, a gauge shows a drop in pressure; then a lever is tripped and the large pieces of gravel are dumped back into the pond.

The pump forces the gravel through 300 to 450 ft. of Naylor 8-in. pipe to the plant on shore, where it is discharged over a Simplicity double-deck vibrating screen. The top deck is covered with a split cloth, the first 4 ft. of which is ½-in. mesh, and the last 6 ft. is 1¼-in. cloth. Because the pipe from the barge discharges directly upon the ½-in. cloth, it has to be replaced three times as often as the 1¼-in. The bottom deck is fitted with a 3/16-in. cloth.

Oversize of the top deck falls down a chute, where it is passed through a Rogers 9- by 20-in. jaw crusher set to turn out 1-in. gravel.

• Oversize off the 1¼-in. screen cloth is chuted down into a 9- by 20-in. jaw crusher powered by a gasoline engine.

This crusher is driven by a Case gasoline engine.

The minus 3/16-in. material runs down a trough to two Woods Auto Vortex classifiers, where it is separated into torpedo sand and masons sand. The extra fine sand is pumped back into the pond.

A Michigan crane is used to stockpile the sand and also to load the trucks. In the near future Mr. Lambert plans to install belt conveyors under each classifier to run the sand out to the stockpiles.

Although it has been an off year for road work around this part of Indiana, the company still sells nearly all the material it can produce. It is rather common for truckers to drive in from cities as far as Hammond, Ind., 40 miles away. The price at the yard ranges from $.85 a cu. yd. for torpedo sand to $1.45 a yd. for 1-in. gravel. The selling price is a rather glowing testimonial to the efficiency of the plant when you consider the $.15 to $.20 royalty that is charged for every yard of material sold.

George Lambert & Sons operate two small plants. This one is run by George Lambert and the other by his son Bruce. Together the two plants turn out about 700 tons of sand and gravel a day.

We learn, via *The Slag Runner*, whose editors had it from *Engineering News Record*, that two acres of terraces over low-level wings of the United States capitol at Washington were recently re-roofed with slag. The *Record*, Sales Manager Carnes of the Maryland Sand Company informed *The Slag Runner*, contained a photograph of this operation (March 24, page 13).

Montreal Host to Canadian Institute Of Mining and Metallurgy

another ON THE SPOT report

THE 51st annual general meeting of the Canadian Institute of Mining and Metallurgy was held in the Windsor Hotel, Montreal, April 25, 26 and 27 and was attended by 1300 delegates. Fred V. Seibert of Winnipeg, industrial commissioner for the Western Region of the Canadian National Railways, was elected president, succeeding R. W. Diamond of Trail, B.C. Mr. Seibert has long been prominent in the Industrial Minerals Division of the Institute.

J. H. Robinson, general superintendent, Gypsum, Lime and Alabastine, Canada, Limited, of Toronto was elected chairman of the Industrial Minerals Division. George F. Jenkins, general manager, Asbestos Corporation Limited, Thetford Mines, Que., was elected vice-chairman and D. F. Hewitt of the Ontario Department of Mines, Toronto, was elected secretary-treasurer of this division.

In the opening paper of the meeting, *The Mineral Industry in 1948,* W. H. Losee, director, Industry and Merchandising Division, Dominion Bureau of Statistics, told of the great progress being made in the production of industrial minerals and their products in Canada during 1948. Total production was valued at $163,700,000, up nearly 18 percent from the previous year. Asbestos production of 707,843 tons valued at $41,300,000 was up 7 percent in quantity and 25 percent in value from the 1947 figures. The gypsum industry again broke its previous high by producing 3,219,469 tons valued at $5,600,000.

Increased demands by the construction industry resulted in a record production of structural materials which in 1948 was valued at $98,800,000 or 16.8 percent more than in the previous year. Cement shipments amounted to 14,100,000 barrels, worth $27,900,000. Clay products made from Canadian clay were valued at $17,300,000. Over a million tons of lime was produced in 1948. Stone quarried was in excess of 11 million tons, worth $17,000,000. Highway construction used a large portion of the 64,200,000 tons of sand and gravel produced in 1948. Each of the industries in the structural materials group reached a new high in the value of production.

In his paper *The Application of Geology in the Search for Industrial Mineral Deposits,* A. S. Dawson, geologist, Department of Industrial Development, Canadian Pacific Railway, Calgary, Alta., discussed the application of geological knowledge in the exploration and development of deposits of industrial minerals and was of the opinion that there is an important field for geologists in this work.

Mr. Dawson divided industrial minerals into three groups: (a) the more valuable minerals, the location of deposits of which controls the site of the processing plants, such as asbestos, barite, magnesite and feldspar; (b) minerals which can be shipped long distances in crude condition to plants whose sites are controlled by considerations other than the location of raw materials, *e.g.* gypsum, phosphate, salt, silica, chemical limestone and talc; (c) lower-priced minerals which, together with their plants, must be well located with respect to markets. In this group are cement raw materials, clays and shales for brick and other heavy clay products, limestone, sand and gravel. Minerals of the first group offered the greatest scope for geological investigations and those of the third the least scope, in Mr. Dawson's opinion.

A. A. Holland, consulting engineer, Moose Jaw, Saskatchewan, in his paper *The Chaplin Sodium Sulphate Plant of Saskatchewan Minerals,* described the plant of Canada's newest producer of anhydrous sodium sulphate at Chaplin, Saskatchewan. Embodying some novel features, this plant, which is owned by the Government of Saskatchewan and situated on Lake Chaplin 60 miles west of Moose Jaw, came into production in 1948. With a rated capacity of 150,000 tons of salt cake (anhydrous sodium sulphate) yearly, this is the largest and newest of the six plants now producing sodium sulphate in western Canada.

Unlike most of the other plants, which use solid crystal material, the Chaplin plant utilizes brine pumped from the lake during the autumn and allowed to crystallize in large reservoirs. Pumps installed have a capacity of 17,500 gallons per minute. It is estimated that the lake contains 15,000,000 tons of dissolved Glaubers salt.

After crystallizing in the reservoirs, the Glaubers salt is harvested by bulldozers and carry-all scrapers and taken to the adjacent plant on a belt conveyor. It is fed into oil-fired Holland evaporators, where it melts in its own water of crystallization and is sprayed by revolving beaters into the heated upper part of the evaporator. At a temperature of 1500 to 1800 deg. F. it is converted into the anhydrous form and drops to the bottom of the evaporator. From this point it is continuously removed and passed to filters where the moisture is reduced to 10 percent. The salt then goes to rotary dryers for removal of the remainder of the moisture. The brine from the filters is pumped back to the evaporators. Dry salt cake from the dryers is ground in a rod mill, screened and sent to storage bins for shipment. At the conclusion of the paper a technicolor film depicting the plant operations was shown.

M. S. Badollet, Johns-Manville Research Centre, Manville, N. J., contributed another of the series of valuable papers dealing with asbestos which he is presenting before the Industrial Minerals Division of the Institute. In the current paper, *Physical Properties of Asbestos Fibres Used in Wet Processes,* Mr. Badollet, who is one of the world's foremost authorities on asbestos fibre, dealt with the properties of fibre desired in asbestos-cement products and described the apparatus developed in his laboratories for evaluating fibre. By means of graphs and tabulated data he showed the effects of the temperature of water, the presence of dust, rock particles and unopened fibre on the raw materials used.

Mr. Badollet also discussed the properties of fibres from Arizona, Italy and Cyprus in addition to those from Canada. In conclusion he dealt with the application of information gained in the laboratory to actual manufacturing processes.

A. U. S. Bureau of Mines publication, *Production of Lightweight Concrete Aggregates from Clays, Shales, Slates and Other Materials* (Report R. I. 4401) is recommended to those who maintain a file on lightweight aggregates.

Jaw Crusher Improves Flow Sheet of Small Sand and Gravel Plant

By WILLIAM M. AVERY

another P&Q exclusive

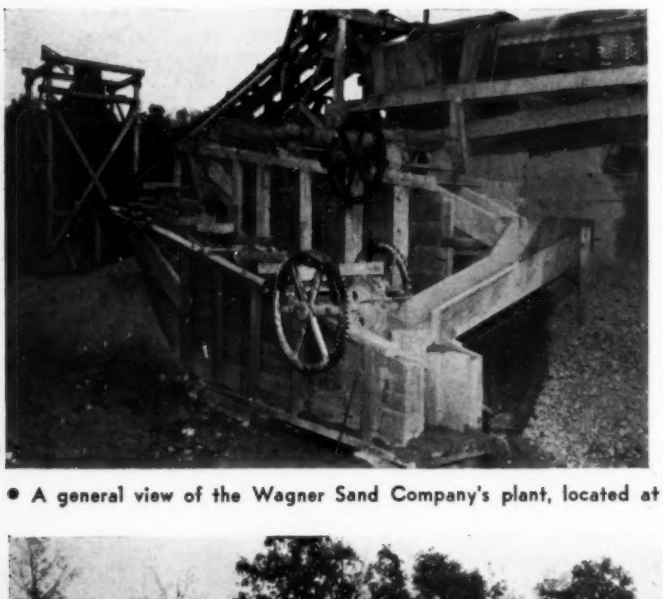
WHEN we visited Wagner Sand Company's operation at Weatherly, Pa., several months ago we found the plant undergoing alterations attendant upon the installation of a jaw crusher. With the addition of the crusher and other changes, capacity now varies between 100 and 120 t.p.h.

As originally built, this plant was a straight washing and screening proposition, and all oversize rock (plus 1½-in.) was rejected. Since it had been the practice to put most of the overburden, containing rather large amounts of coarse material, through the plant, it follows that considerable quantities of waste material were handled.

The crusher selected to remedy this condition is a No. 25 Kue-Ken single-jaw Simplex. This machine is said to incorporate the principle of "crushing without rubbing," first introduced in the maker's double-jaw crushers. It has a 7- by 12-in. feed opening, and is completely sealed so that dust cannot enter and oil cannot escape.

Most of the 255-acre Wagner property is covered with sand and gravel, and the material reserves are in consequence almost unlimited. The deposit in use at present is about 65 ft., below the level of the plant, and the bank is about 45 ft. high. The overburden, ranging from 2½ to 14 ft. in depth, is intermixed with an excellent grade of gravel, and fortunately contains no clay. A typical river deposit, the sand ranges from quite coarse in the upper strata to extremely fine at depths over 25 or 30 ft., and in consequence it is a simple matter to control the output of the plant by selection in the pit. Loading is done with an Oliver 88 tractor mounting a Lull hoist with a ¾-cu. yd. bucket. An Oliver 25

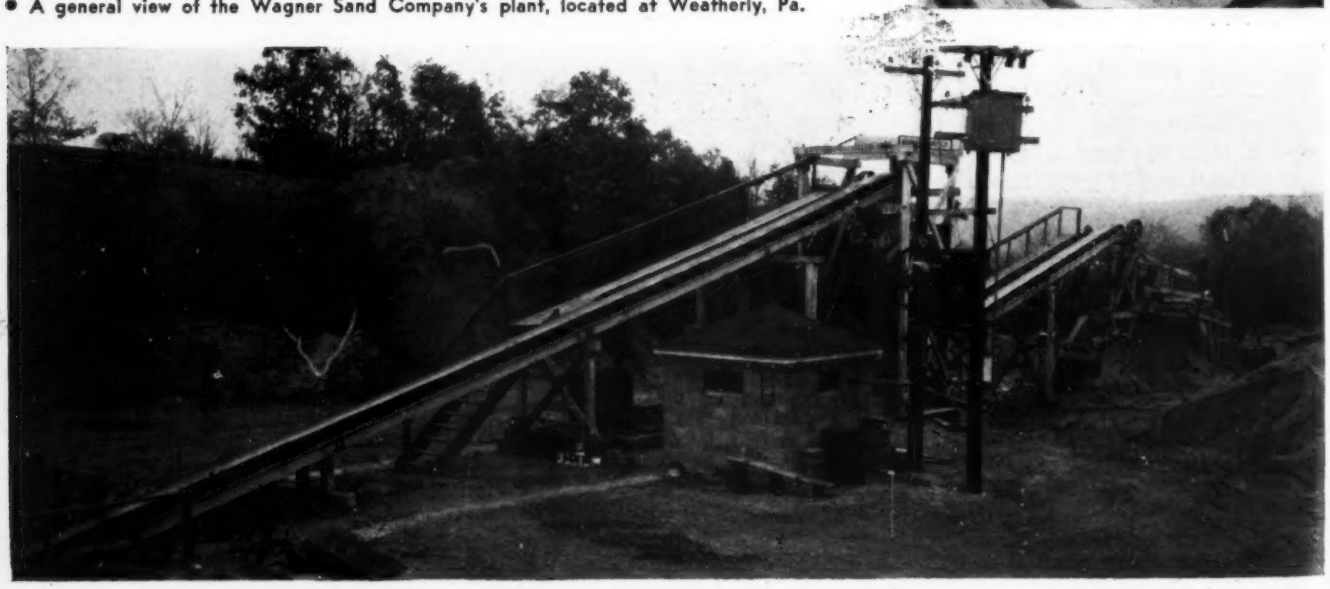
• Carl E. Wagner, secretary-treasurer of the Wagner Sand Company.



• Left: Fines are flumed from the trommel screen to these drag classifiers. Two grades of sand — concrete and mason's — are produced.

• Right: The entire flow is scalped at 1½-in. and the oversize reduced in this single-jaw crusher.

• A general view of the Wagner Sand Company's plant, located at Weatherly, Pa.



• Three sizes of gravel drop from the trommel screen into open storage compartments. A tractor-mounted loader is used for loading trucks.

with a 5/8-cu. yd. Lessmann Loader is used for loading out finished materials.

A small end-dump truck is used for the short, up-hill haul from the pit to the plant. There the material is dumped into a hopper mounted above a reciprocating feeder which discharges onto an 18-in. inclined belt conveyor. Plus 1½-in. rock is scalped off on a Universal 4- by 8-ft. single-deck vibrating screen and chuted directly into the Kue-Ken Simplex jaw crusher.

The crushed material rejoins the fines below the screen on a second 18-in. belt conveyor by means of which the entire flow is elevated to a 3½-ft.-diameter by 22-ft.-long Link-Belt trommel screen. Fines are washed through both the screen and the jacket by water sprays and flumed to a Good Roads drag classifier.

Water for this operation comes from a dam which the company built in nearby Brushy Hollow Creek. It is pumped to the plant by a Barnes 40-M centrifugal pump driven by a LeRoi motor. When it is running at full capacity the plant consumes about 40,000 gallons per hour, all of which passes through the rotary screen. Three sizes of gravel (3/8-in., 3/4-in., and 1½-in.) are screened out on the trommel and drop into ground-level bins. Only two grades of sand are produced—concrete and mason's.

Until the recent changes were made, the entire plant was driven through flat-belt transmission by two 100-hp. gasoline engines. Individual electric motors have now been installed to drive the various pieces of equipment—10-hp. units on the crusher and the feeder and No. 1 conveyor, and a 20-hp. for the No. 2 conveyor and the rotary screen. The vibrating screen is still driven by a Wisconsin air-cooled gasoline engine.

The Wagner plant is a three-man operation. The company operates one delivery truck of its own to serve customers within a 20-mi. radius. Weatherly is located less than 10 mi. due east of Hazleton, Pa.

Heads of the company are R. J. Wagner, president, C. E. Wagner, vice-president, and Carl E. Wagner, secretary-treasurer. The Wagners purchased the property in 1937, and for a number of years operated only two portable conveyors with a very nominal output. The present plant was placed in operation in July, 1946.

Sales, Earnings Climb To All-Time Highs in '48 For Nonmetallic Firms

Reports on 12-month periods indicating sales, earnings and related statistics of the following nonmetallic minerals producing concerns reflect in general a healthy condition:

The Marquette Cement Manufacturing Company's earnings during 1948 amounted to $2,229,703, as compared with $1,902,716 during 1947. Sales climbed to $19,721,174 from $16,864,944 in the previous year. Sales and net income figures both reached all-time highs.

Alpha Portland Cement net income during the 12-month period ending March 31 was reported at $2,970,852, at $5.04 per share; last year the figures were $1,876,696 and $3.18, respectively.

Sales of the Consolidated Rock Products Company of Los Angeles amounted to $14,258,172 in 1948, as compared with $12,619,441 in 1947. Net income for 1948 was $758,179; 1947 net income was $676,876.

The Pacific Portland Cement Company's report showed a net profit of $2,150,233 in 1948, as against $1,217,296 for the previous year. Sales during 1948 amounted to $9,849,826; the 1947 sales figure was $9,130,287.

For the 12 months ending March 31 Giant Portland Cement Company officials reported net sales of $3,384,325, as compared with $2,466,241 in 1947. Net income for 1948 was $503,763; for the previous year, $278,148.

The Warner Company's annual report for 1948 showed net sales amounting to $16,678,299, an increase of 33 percent over net sales during 1947. Net income last year amounted to $2,275,897, as compared with $1,580,535 for 1947.

Safety, News, Improvements Headlined in "Warner News"

The Warner Company's attractive magazine, *Warner News,* is our idea of a fine company paper. Reader appeal is apparently the constant concern of the staff. Safety at the plant, in the home, and elsewhere is among the topics stressed in every issue. In a recent issue First Aid helpers had their pictures published, showing the awarding of Red Cross certificates.

New equipment at Warner's Cedar Hollow facilities is pictured and described in the same issue. Personal items about Warner employees of various plants tell of honors, promotions, family news, and other interesting facts. A two-page spread, supplement to President John Curtin's report for 1948, explains in graphic style "Where Our Money Went in 1948."

Particularly recommended for imitation by other firms is the Warner policy of rewarding constructive suggestions submitted by employees. During 1948, states the *News,* the company paid $924 for "good ideas."

62 Percent Gain Reported In General Portland Profits

A prosperous year during 1948 has been reported to stockholders of the General Portland Cement Company, whose officials stated that net sales of $19,490,959 had been chalked up, as compared with $14,724,574 in 1947. The net income after deductions amounted to $4,273,036, a sizable gain over the 1947 figure of $2,646,955.

In 1948 earnings were $4.21 per share, as compared with $2.63 per share in 1947.

ROBERT C. SCIFRIES, plant engineer for the National Gypsum Company at Mobile, Ala., was among the ten young executives who won fellowships for the study of problems of industrial administration in a nation-wide competition, according to an announcement released by the Massachusetts Institute of Technology.

Mr. Scifries will study under one of the Alfred P. Sloan fellowships, which carry up to $4000 for a year of study of business management problems, industrial administration, and human relations in industry.

Aerial view of the Caterpillar diesel engine plant. In the right background are the water cooling tower and the cutting oil disposal plant.

Open House at Caterpillar Marks Climax of Post-War Expansion Program

another ON THE SPOT report!

CATERPILLAR'S vast post-war expansion program was climaxed the week of April 24 through 29 when the doors of the new Diesel Engine Factory (Bldg. KK) at the Peoria, Ill., plant were opened to the general public for as festive an Open House celebration as is possible in an industrial installation. The plant played host to throngs of visitors throughout the elaborate and well-planned occasion, in conjunction with which the cities of Peoria and East Peoria officially joined by proclaiming "Caterpillar Week."

Members of the press and radio were guests the preceding Friday at a special preview, consisting of a tour of the plant, luncheon at the cafeteria where company officials were introduced and President Louis B. Neumiller gave a brief address, and, lastly, an informal gathering at the Hotel Pere Marquette.

In his address, President Neumiller outlined Caterpillar's progress over the past three decades, referring to its participation in the industrial mobilization programs of both World Wars I and II and the material assistance which its diversified activities rendered in enabling Peoria to maintain an above-average employment level during the depression years. He said the company was fully prepared to cope with the return of the buyer's market, now at hand.

The new factory, comprising an area of 925,000 sq. ft., represents four and one-half years of planning to convert from the drawing boards a plant engineered for a specific operation, rather than a conversion of an operation to a specific type of building. The building was designed, erected and equipped expressly for the manufacture of all diesel engines in the company's line, whether merchandised as industrial power units, marine engines or electric sets. The first production machines were installed in August, 1947, and by mid-April, 1949, more than 1,000,000 horsepower of diesel engines had been manufactured and sold.

The exterior of the building is of red brick, ornamented by cast stone. The roof is constructed of cast tile fiber glass insulation, paper, tar and gravel. The floor is poured 8 inches thick, with steel reinforcement rods on 12-inch centers and covered by 3-inch creosoted blocks.

The assembly area consists of three assembly lines for basic engines, two for erection, testing, painting and shipping of industrial engines, a test room and large areas for the storage of finished parts, both purchased finished and machine shop finished. All three basic engine assembly lines, running parallel, end in the same bay, where a bridge crane is used to remove the engines to a set of gravity roller conveyors along which they are moved by a drag chain into the test room and stored pending test.

There are 21 engine test cells in the building, each large enough to test two engines. The total number of machines in the factory amounts to 1,218, of which 1,140 are in the machine shop and 78 are in the assembly area. In addition to 1,400 cranes capable of moving materials weighing from 500 lbs. to 15 tons, approximately 4 miles of conveyors are in use. Material handled each month amounts to approximately 4,800 tons. An average of 3,000 persons are employed in carrying out the various operations.

Right: The test area for industrial engines.
Below: Lloyd J. Ely (right), manager of the diesel engine factory, directing members of the press and radio on the plant tour.

President Louis B. Neumiller addressing guests of the press and radio attending the preview in the plant cafeteria.

personal mention

We present herewith portraits of William P. Gano, H. W. Rich and L. C. Hawk, whose appointments to new posts

W. P. Gano

H. W. Rich

in the Pennsylvania-Dixie Cement Corporation were announced in the May issue. Unfortunately the photographs did not arrive in time to be published with the announcement.

L. C. Hawk

Mr. Gano was appointed chemical engineer; Mr. Rich became division superintendent (North); and Mr. Hawk was named research director.

Changes in the personnel of the Nazareth Cement Company have been announced, as follows:

HARRY A. REICHENBACH, in charge of production for several years, was elected vice-president in charge of production.

SCOTT BROBSTON was named treasurer; and Miss Irene E. Hawk was appointed assistant secretary.

EDMUND C. MORGAN was made acting chief chemist; and Ernest Wilken is now plant superintendent.

Some of these changes were brought about by retirements. Miss Charlotte F. Michael, formerly assistant secretary and acting treasurer, retired after 40 years of service. Willoughby F. Follweiler, who was plant superintendent for 41 years, also retired. Mr. Morgan assumed the duties of J. Clifford Evans, chief chemist, who has been incapacitated by illness.

DR. RALPH J. SLUTZ, formerly with the Institute for Advanced Study, has joined the Electronics Division of the National Bureau of Standards, where he will be concerned with basic research, design, and development of electronic computers. His work will include standards for electronic computers, simulators, analyzers, and special electromechanical devices, as well as the development of components, circuits, and designs for such equipment.

Three new directors and two new vice-presidents have been named by Dravo Corporation, Pittsburgh.

The new directors of the firm are GORDON W. CAMERON, treasurer of the Aluminum Company of America; LOUIS A. MERTZ, vice-president and treasurer of Dravo Corporation, and HOWARD H. STURDY, general manager of Dravo's Contracting Division. The vice-presidents, elected at the directors' organization meeting, are MR. STURDY and BYRON E. RHOADS, chief engineer of Dravo's Contracting Division.

WALTER F. WINTERS, formerly district engineer at Seattle for the Washington State Highway Department, has been appointed general manager of The Asphalt Institute, with offices at 681 Grant Street, Denver, Colo.

JOSEPH UNGER, chief engineer in the Bureau of Location and Design of the Ohio State Highway Department, has resigned, effective May 15, to become manager of the Dayton office of the Carroll & Edwards Equipment Company of Cincinnati.

ALLEN WAGNER, who has been for the last three years public relations manager of the American Society of Civil Engineers in New York and executive editor of the society's publication, has been named director of public relations by the American Road Builders' Association. He will maintain headquarters in Washington, D. C.

ARTHUR A. FARRELL has been named director of the New York State Department of Labor's Division of Industrial Safety Service. His work will be to assist in the enforcement of laws and industrial codes dealing with the health and safety of persons employed in places such as quarries, mines, tunnels and plants.

ROBERT C. HUGHES has been named sales manager for rock wool in the Building Products Division of the Great Lakes Carbon Corporation of New York, N. Y.

Officials of the Pennsylvania-Dixie Cement Corporation have announced the following appointments, effective May 1:

RUSS A. LOVELAND, superintendent

R. A. Loveland

J. C. McGrath

of Plant No. 4 at Nazareth, Pa.; JOSEPH C. MCGRATH, superintendent of Plant No. 9 at West Winfield, Pa.; EVEN B. GUTH, chief chemist at Plant No. 9; ALFRED E. CARPENTER, chief chemist at Plant No. 2; WALTER I. NUNNELEE, JR., assistant chemical engineer with headquarters at Plant No. 8.

Mr. Loveland is returning to Penn-Dixie after several years, having served as assistant chemist at Clinchfield in 1925-26. In the interim he was associated in various capacities with the Three Forks Portland Cement Company at Trident, Mont.; the Dewey Portland Cement Company at Dewey, Okla., and Davenport, Iowa; Cementos Portland Moctezuma, S. A., Cuernavoca, Morelos, Mexico; and the Marquette Cement Manufacturing Company. From June, 1947, to his recent appointment with Penn-Dixie he served as research engineer for the Portland Cement Association in the manufacturing research section.

Mr. McGrath became associated with Penn-Dixie in 1946 as an engineer-draftsman, at Portland Point, N. Y., and was transferred to Clinchfield in 1947. When Plant No. 9 was acquired in January, 1949, he was appointed plant engineer.

JOHN C. HAZZARD, lime sales manager for The Warner Company, was recently honored with a state appointment. Governor Carvel of Delaware appointed him for a five-year term on the state park commission.

PAUL E. PATTON has been appointed assistant plant manager at the Hudson, N. Y., plant of Universal Atlas Cement Company, a United States Steel Corporation subsidiary.

Mr. Patton began working with the company in April, 1926. He subsequently worked in various capacities until July, 1942, when he was made assistant to the plant manager, a position he has held until his present appointment.

DAVID G. STENBERG has been appointed head of the Chicago district sales office of the National Gypsum Company. He formerly was in the Buffalo sales office of the company and has been with the firm for 10 years.

GEORGE B. BEITZEL was elected president of the Pennsylvania Salt Manufacturing Company on the eve of its 100th anniversary year. The new chief executive joined the company 19 years ago and since January 1, 1949, has served as executive vice-president.

LEONARD T. BEALE, president for the last 20 years, will continue with the company as chairman of the board.

WILLIAM P. DRAKE was named vice-president in charge of sales, and WILLIAM F. MITCHELL vice-president in charge of manufacturing.

Mr Drake, formerly assistant vice-president of sales, assumes the position left vacant when Mr. Beitzel became executive vice-president. Mr. Mitchell, assistant vice-president of manufacturing, succeeds Y. F. HARDCASTLE, who retires from active participation in the company's operation but who remains as a member of the board.

Mr. Beitzel and FRED C. SHANAMAN, president of Pennsylvania Salt Manufacturing Company of Washington, wholly-owned West Coast subsidiary, were elected to two new directorships created at a recent meeting of the board. Mr. Shanaman also is a vice-president of the parent company.

HAROLD G. GARNER, a paving engineer in the Topeka, Kan., area, has been named district engineer of the Portland Cement Association's Omaha office, succeeding the late C. W. Hiner.

Mr. Garner was employed by the Missouri State Highway Department from 1930 to 1940 before joining the P.C.A. staff as soil-cement engineer in the Omaha district. In 1943 he was transferred to the Washington, D. C., office as paving engineer, and in 1946 he went to Topeka in the same capacity.

In his present post Mr. Garner will direct association field work in Nebraska under the general supervision of R. F. Dierking, West Central regional manager.

The following nine directors of the Lawrence Portland Cement Company were re-elected to the board: President JAMES H. ACKERMAN, NILS ANDERSON, CLIFFORD HEMPHILL, GEORGE F. HETFIELD, WILLIAM H. KLEIN (vice-president), BRUNSON S. MCCUTCHEN, JOHN R. MCGINLEY, CURTIS W. MCGRAW, and ASA F. RANDOLPH.

At Springfield, Ill., Governor Adlai Stevenson appointed WALTER EADIE, a veteran in the mining industry, as director of the state department of mines and minerals. He succeeds Harold L. Walker, head of the department of mining and metallurgical engineering at the University of Illinois, who had accepted an interim appointment after the death of Director James W. Starks.

Mr. Eadie has had more than 40 years of experience in various phases of mining, having worked for 12 years as a miner in the Springfield area for the Atlas Powder Company. In subsequent years he was employed in a supervisory capacity by a coal mining firm.

LEO H. CORNING, since 1935 assistant manager of the Portland Cement Association's structural and railways bureau, was appointed manager of the bureau April 1, according to an announcement by Frank T. Sheets, P.C.A. president. The appointment of Mr. Corning fills the vacancy created by the recent death of Arthur J. Boase.

Mr. Corning, who was graduated in civil engineering and received his B.S. and C.E. degrees from Case Institute of Technology, joined the association's structural bureau staff in May, 1929. Immediately prior to joining the association, Mr. Corning was a structural engineer with the Foundation Company, contractors and engineers, of Chicago.

obituaries

DR. ARISTIDE FANTI, scientific librarian of the National Bureau of Standards from 1910 to 1938, died on April 5 in Cheverly, Md., after a brief illness.

Dr. Fanti was born in Capri, Italy, in 1868. He was educated at the universities of Parma, Bologna, and Pavia, obtaining his doctorate in mathematics from the University of Pava.

After teaching in the Berlitz School of Languages in Berlin and London, he came to the United States in 1904 and in the same year became a member of the staff of the Library of Congress, working in the Catalog Division. He remained their until 1910, when he was appointed scientific librarian of the National Bureau of Standards.

EDGAR L. SMITH, retired president of the Alliance Sand Company, subsidiary of the Lawrence Portland Cement Company, died on March 4 at a hospital at Northampton, Pa. He had retired from his duties on account of ill health only a month before his death.

Mr. Smith had been associated with his company for 25 years, beginning his activity as a salesman. In later years he became secretary and then treasurer before being named president. He was 63 years of age.

JOHN SALASKY, 51, an employee of the Lawrence Portland Cement Company at Northampton, Pa., for the last 27 years, was fatally injured in an accident on January 31. Although the accident was not witnessed by anyone, it was thought that he slipped and fell from a train transporting rock from the quarry to the plant.

ROBERT G. MILLER, who formerly operated a sand and gravel business in East Corning N. Y. died on April 14 in Elmira N. Y. at the age of 72. He retired from business several years ago.

OSCAR BLODGETT COLWELL, 74, former owner and operator of O. B. Colwell & Sons sand and gravel producers at Watertown, N. Y., died on May 5.

Mr. Colwell established his sand and gravel business in 1920. He continued the business until last fall, when he transferred it to his sons, Victor and Oscar, and retired. The business, known as O. B. Colwell & Sons when he was active, is now known as Colwell Brothers.

C. W. HINER, district engineer of the Omaha office of the Portland Cement Association for the last eight years, and well known in engineering circles through the state of Nebraska, died suddenly at his home in Lincoln on April 11.

Mr. Hiner was a registered professional engineer in Nebraska, and had been with the association for 21 years. Since March, 1941, he had served as district engineer of the Omaha office. He was an associate member of the American Society of Civil Engineers, the Omaha Athletic Club, Chamber of Commerce, and the University Club of Lincoln.

WILLIAM C. MATTISON, secretary and a director of the Woodstock Slag Corporation of Birmingham, Ala., died on April 2.

W. SCOTT WILSON, manager of the Hudson, N. Y., plant of Universal Atlas Cement Company, a United States Steel Corporation subsidiary, died unexpectedly at his home, 1 Newman Road, Hudson, N. Y., on May 15. Mr. Wilson had been recuperating from a heart attack suffered last March 6.

Mr. Wilson was graduated in mechanical engineering at Cornell University and joined the Atlas as a repairman at its Northampton, Pa., plant in 1914. The same year he was transferred to the company's plant at Hudson, where he first worked as draftsman and then successively advanced to operating foreman, assistant maintenance foreman, maintenance foreman and assistant plant manager. In 1944, he was appointed plant manager.

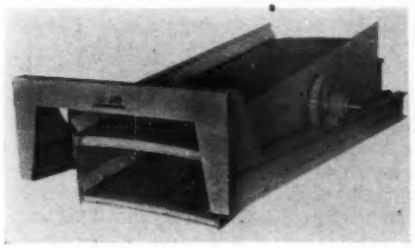
CHARLES H. WILLIAMS, owner and operator of the Williams Sand and Gravel Company at Dallas, Tex., died on March 30 in that city. Between 1925 and 1935 Mr. Williams played amateur and semiprofessional baseball with various teams throughout Texas.

new machinery and supplies

PIT AND QUARRY

● Vibrating Screen

The El-Jay Machine & Manufacturing Company, Eugene, Ore., has developed a vibrating screen which features torsion bar stabilizers maintaining



a uniform circulation motion throughout the entire screening area regardless of surge loads or varying speeds of the eccentric shaft. All bearing points in the torsion bar assembly are fitted with rubber cushions so that all movement is confined to the flexing of the fibers of the rubber.

The angle of the vibrating member can be quickly altered without disturbing the base frame by adjustable connecting links. Screen cloth can be changed on any deck without disturbing any other deck. It is said that balance wheels virtually eliminate transmission of vibration to base frame and bunkers.

● Electric Vulcanizer

A new method of repairing injuries to off-the-road tires which penetrate a few of the plies is recommended by the Goodyear Tire & Rubber Company, Akron, O. This method makes use of a light, portable hot air blower or vulcanizer (electrically operated) which vulcanizes a special rubber into the injury without physical pressure.

The equipment is known as the Schlegel "Air-Welder." It weighs only 17 lbs., but may be used on any job wherever electric current is available. This eliminates loss of time and labor required for removing the tire, transportation problems involved in making the repair and loss of the use of equipment.

The special rubber used in the vulcanizing process is termed "Air-Weld," and is made exclusively for Schlegel by Goodyear.

Procedure for making spot repairs with Air-Welder is the same as that used

with a hot plate or vulcanizer through the cementing operation. This process consists of filling the cavity with rubber to the outer surface of the tire. Then the Air-Welder with blower cone is placed over the repair area with the edges of the cone about ¼ to ½ in. from the tire to allow hot air to flow freely out of the cone.

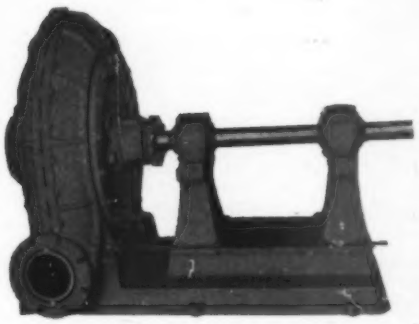
After the repaired rubber becomes warm and soft it is rolled down, the Air-Welder is replaced over repair during the remainder of the cure. Curing time is normally from one to three hours, depending on the depth of the repair. Complete equipment is sold by R. E. Schlegel, Inc., 114 East Exchange Street, Akron, O.

● Centrifugal Sand and Gravel Pump

The "Tell-Tale" centrifugal sand and gravel pump, manufactured by the Pekor Iron Works, 9th Street at Central, Columbus, Ga., is described as the pump "with the shell that never wears out". The split shells, made of close-grained grey iron castings, have portholes which are formed around the outer periphery when the two shell halves are clamped together, and are supplied with renewable liners. These liners take the abrasive action which would otherwise be absorbed by the shell, thus preventing wear on the shells.

Shell liners, impellers and both face plate liners, the only parts exposed to abrasive wear, are made from the company's own nickel alloy, a tough material highly resistant to the abrasive action of sand and gravel. The shell liners are thicker where there is the greatest exposure to wear; and the larger the pump, the thicker the metal at all points, including the area of greater wear.

Impellers are of the enclosed type, to insure maximum efficiency; they are screwed on shafts to permit easy re-



moval in the field. A special wear-resistant iron alloy is employed for the impellers.

There are three types of Tell-Tale pumps—the 6-in. heavy-duty bronze bearing model (standard, right-hand; special, left-hand); the 6-in. heavy-duty ball-bearing pump; and the 6-in. standard duty bronze bearing model.

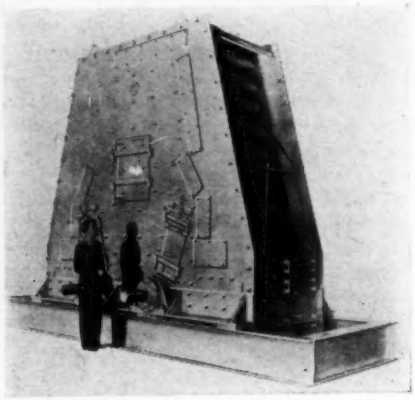
A development which will benefit the lime industry is a new low-cost reciprocating plate feeder with anti-friction bearings recently announced by the Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee, Wis. This feeder has positive feed control by means of an adjustable eccentric. Heavy plate construction carries through the rugged design.

● Big Impact Crusher

New Holland Manufacturing Co., Mountville, Pa., in January began quantity production of what is claimed to be world's largest impact stone crusher.

Built around well-tested principles, the new Model 5050 Double Impeller Breaker can take stone up to 50 in. and reduce it to aggregate in one operation. Weighing nearly 54 tons and standing 14 ft. high, it is said to be the largest crusher ever made to crush stone by impact in suspension.

Taking any stone fitting a 2-cu. yd. shovel, the 5050 will produce aggregate in two sizes, minus 8-in. and minus 3½-in. Mounted on 18-in. I-beam skids,



the breaker is 14 ft. long and 9 ft. 6 in. wide.

Twin cast-steel impellers, each weighing 13,400 pounds, catch the stone in mid-air as it enters the breaking chamber and sends it flying against breaker bars set around the chamber. Each impeller has three pairs of 500-lb. manganese or alloy steel bars, reversible to provide two wearing edges. Impellers, capable of speeds up to 785 r.p.m., require separate power units producing from 100 to 125 hp. Each impeller has its own V-belt drive.

High-carbon steel shafts have a diameter through impellers of 6⅞ in. Bearings are self-aligning heavy-duty antifriction type. The breaker bar, 8 in. in diameter, is made of manganese and abrasion-resistant steel. The same steel is used in the 2-in. liner plates. Outer plates are 2-in. mild steel. The opening into the breaker chamber is 50 by 50 in. The outlet opening is 53 in. by 13 ft. 3 in.

The special apron feeder designed for the 5050 weighs 25,475 lbs. It is 50 in. wide by 14 ft., 6 in. centers. Pans have a 9-in. pitch and are 50 in. wide, weighing 371 lbs. each. The head sprocket is of carbon steel, with renewable manganese teeth, and the tail wheel is carbon steel, with renewable manganese pads.

● A.-C. Arc Welders

A new line of a.-c. arc welders, featuring increased welding range and stepless precision current control, has been announced by General Electric's Welding Divisions.

The new welders are available in 200-, 300-, 400-, and 500-amp. models for indoor manual welding; 750- and 1000-

amp. models for machine and submerged melt welding; and a special 200-amp. model for light-duty, job-shop welding. The 300-, 400-, and 500-amp. models are offered also in weather-resistant enclosures with Idlematic control for both indoor and outdoor operation.

Dual current ranges and increased adjustment overtravel on the new machines provide extra low-current range with high maximum short-time output. They are designed with stepless current control, operated by a bearing-mounted current-adjustment crank which enables the operator to make precision settings throughout the current range.

The new welders have an open-circuit voltage of 75 volts, providing good welding performance through added arc stability. Idlematic controls on the weather-resistant models automatically reduce the open circuit voltage on the electrode to about 30 volts; but when the arc is struck, the advantage of 75-volt open-circuit voltage is retained.

Increased strength and protection for the welders are provided by the newly designed steel housings. Built-in power factor correction helps to keep down power consumption, thus lowering operating cost. Cool operation is attained through the use of up-draft, fan-assisted ventilation.

● Thawing Pits

A method of thawing frozen material in hopper cars without direct flame contact has been made available by the Hauck Manufacturing Co., 124-136 Tenth Street, Brooklyn 15, N.Y.

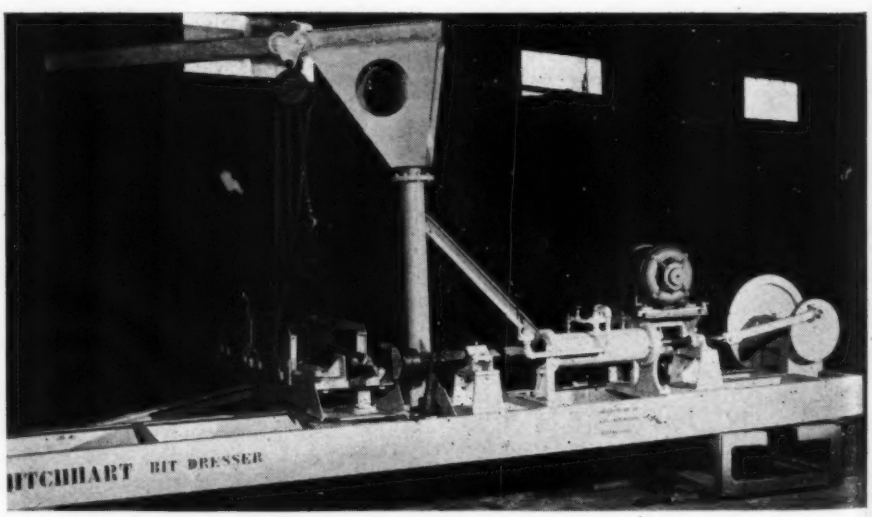
By means of oil or gas burners in refractory-lined pits, radiant heat produced in a small combustion space rises to the hopper bottom. According to company tests, 4 cars per hour or 96 cars per day have been thawed. One man can operate 12 pits at a time. Fuel consumption is said to be low, varying with the severity of the freeze-up and the size of the car.

● Bit Dressing Machine

A bit dressing machine manufactured by A. W. Mitchhart, Tiffin, O., reportedly can also be used for forging, or can be changed into an air compressor in a few minutes. Among the special features mentioned by the manufacturer are the following: Low operating cost; low power requirement—5 hp.; safe operation; few moving parts; no springs; fingertip control; handling of bits up to 12-in. size; one-man operation; simplicity of construction.

The device can be powered with electricity or a gasoline engine, or it can be driven from a line shaft. It is portable and can be operated in the field. Heavy channel and I-beams form the frame, which is reinforced and angle braced at points of strain. A crane and a hoist are standard equipment for handling the bits.

To dress the edge of the bit, the operator swings the frame containing the bit to the proper position. He places the edging die over the hammer and dresses the edges—an operation requiring about two minutes. The frame can be moved with a lever to change the position of the bit. The end dressing die gives the face of the bit the required bevel, while the side die supplies the correct curve.

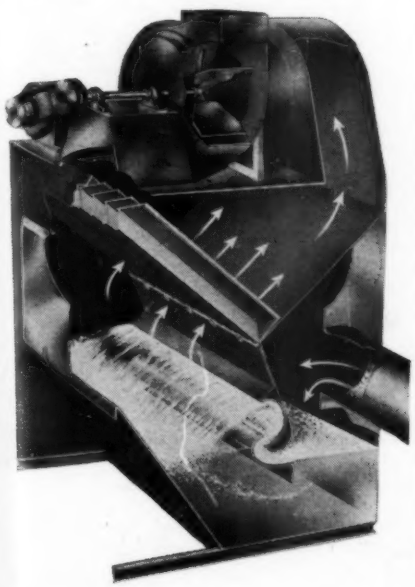


A lightweight plastic molded lamp bracket that fits any type of electric or carbide lamp has been developed by the E. D. Bullard Company, 275 Eighth Street, San Francisco 3, Calif. According to the manufacturer, the bracket will not deteriorate with age nor is it affected by water, gases or acids.

● Redesigned Precipitator

The Type N "Roto-Clone," used for the collection and control of dust generated in most nonmetallic minerals operations, has been redesigned to permit wider application and improved performance. This collector is a hydrostatic precipitator which cleans the air by the combined action of centrifugal force and a thorough intermixing of water and dust-laden air, re-using the water without recirculation pumps or spray nozzles.

The redesigned Roto-Clone, with capacities through 48,000 c.f.m., maintains a lower pressure drop with the same cleaning efficiency and water recirculation rate, and can be operated from 50 to 120 percent of its nominal rating without affecting its collecting efficiency. All sizes are available in either manual clean-out, sludge ejector, or hopper-bottom arrangement. Manufactured by the American Air Filter Company, Inc., 215 Central Avenue, Louisville, Ky.



It's *yardage* that counts! And my MICHIGAN has convinced me that you don't always need a big dipper to get big yardage. No matter what I put her on—sand, gravel, clay, rock—that baby *really* goes to town! Gets out more yardage per hour than any shovel that size I've ever owned. She crowds and swings fast, and dumps fast and clean. When anyone says truck shovels to *me*, I say, 'my *next* one's a MICHIGAN, too!' For the best 'buy' in a truck shovel, get a MICHIGAN!"

Write for Bulletin 100—
"On the Job With MICHIGAN"

DID YOU KNOW
you can buy
a brand new
MICHIGAN
TRUCK CRANE
complete with
chassis for as
little as $10,250
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MICHIGAN POWER SHOVEL COMPANY
315 SECOND STREET, BENTON HARBOR, MICHIGAN, U.S.A.

● All-Electric Shovel

The introduction of the Marion 93-M Ward-Leonard all-electric shovel has been announced by Marion Power Shovel Co. of Marion, O.

The 93-M Ward-Leonard machine, which carries a 2½-cu. yd. dipper and a 28-ft. boom as standard equipment, is designed for heavy-duty, long-life service on a variety of excavating jobs in the quarry, coal, metal mining and heavy construction industries.

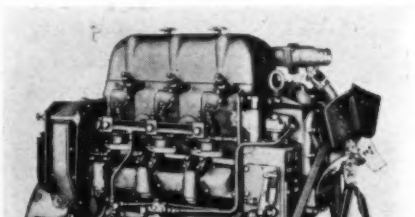
All motions are electrically controlled. The swing machinery is powered by a separate vertical motor, direct-geared through two intermediate shafts to the main swing shaft, which is mounted on the upper frame structure. The hoist machinery is powered by a separate motor, first through a silent chain reduction to the intermediate shaft, and then through a single gear reduction to the drum shaft. A separate motor direct-geared through an intermediate shaft to the shipper shaft supplies power for the crowd machinery.

The motor generator set on the Marion 93-M Ward-Leonard consists of an induction driving motor direct-connected to three direct current generators in line, and an exciter, all mounted on a self-supporting base. Each generator is of the Ward-Leonard type, designed for variable voltage control. The motors themselves are the latest mill type, 600-line, shunt-wound, 230-volt, d.c., and possess exceptionally low armature inertia and high overload capacity.

● 2-Cycle Diesel Engines

An exhaustive research over a period of years has resulted in the development by The Harnischfeger Corp., Port Washington, Wis., of the P & H diesel power units.

All engine parts are interchangeable from one model to another with, of course, the exception of such parts as the crankshaft, camshaft, crankcase, etc., which are necessarily different due to the added number of cylinders. The outstanding advantages of the P & H diesel is the interchangeability of the numerous parts and the patented P & H cylinder head and liner assembly. Each cylinder is an independent, fully water-jacketed assembled unit designed for time saving when maintenance is required, thus reducing the cost of major overhauls. Should it be necessary to change piston or connecting rod of a cylinder, it is a 40-minute job to (1) disconnect the injector fuel line and remove injector; (2) remove the connecting rod caps through the large inspection port in lower crankcase (note—it is not necessary to remove the oil pan); (3) remove the four head nuts and lift out the cylinder head and liner assembly as a unit, allowing the piston and connecting rod to be lifted free with the assembly; (4) install spare P & H power unit assembly by reversing the action taken through steps one to three inclusive.



P & H diesel engines are full diesels employing the two-stroke principle, with a bore of 4.5 in. and a stroke of 5.5 in. and having a displacement of 87.5 cu. in. per cylinder. The Model 387-C crankshaft has four main bearings; the Model 687-C crankshaft has seven main bearings. All pins and journals are drilled for continuous pressure lubrication. The camshaft is also a heat-treated alloy steel forging. The large-diameter camshaft bearings are also pressure-lubricated.

● Depth-Hardening Compound

Hardening drills, chisels, gouges, caulkers, reamers, dies, taps, cutting tools, or any carbon or high-speed steel to any desired depth in minutes is now possible with an amazing new compound called "Hi-Speed-It".

Ordinary wire nails and common reinforcing rods hardened in this new way can be driven through tough automobile spring leaf with no apparent dulling. Dime-store chisels become so hard that they cut nicks in chrome-manganese railway rails. In a recent test before engineers of a large railroad, a 1½-in. gauge was deep hardened in 3 minutes. It was at once put into an air hammer and cut, without stopping, four strips of 5/16-in. deep by ⅜-in. wide by 14-in. long from a piece of #302 stainless steel. It is not necessary to re-harden tools before sharpening again.

The process is extremely simple. No special skill nor special equipment is required. The object to be hardened is heated to a cherry red color in an ordinary plumber's torch or an open forge or furnace. It is then dipped, rolled or stirred in the gray powder. 15 to 30 seconds are allowed for the powder to fuse and form a crust, after which the object is again dipped lightly in or sprinkled with Hi-Speed-It. The object is reheated cherry red. It is then quickly quenched in brine, then in clean, cold water.

Depth of hardness is controlled simply by repeating the first four steps before quenching. High-speed steels are processed similarly, but at higher temperatures and are quenched in oil. Complete instructions are printed on every can and drum.

Outstanding among its many advantages is the fact that Hi-Speed-It contains no cyanide or other producers of toxic fumes. It is believed that the product will find ready acceptance, not only in those fields where tool maintenance is a problem, but also in the manufacture of steel tools of all types.

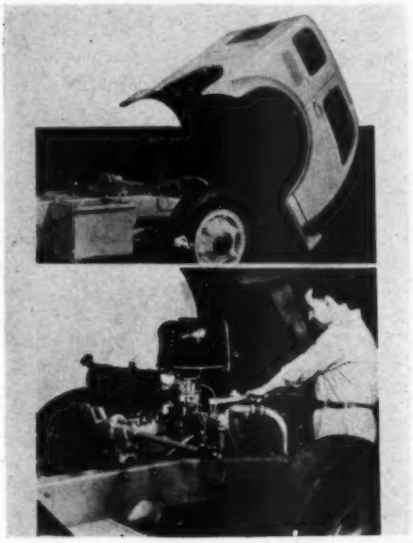
Hi-Speed-It is manufactured and sold exclusively by the Wilson Carbon Company, Inc., 60 East 42nd Street, New York 17, N. Y.

This is a General Electric horizontal totally-enclosed, unit-cooled d.-c. motor with new air-to-air cooling assembly which enables it to operate at slow speeds for long periods of time. The motor is available in ratings up to 200 hp. Two blowers in the air-to-air cooling assembly provide ventilation independent of motor speed. One blower circulates internal air through the motor and unit cooler, while the other blows external air through the cooler.

trade notes

● Power Lift Cab

The most striking feature of the new line of trucks introduced by the White Motor Company, Cleveland, O., is a power lift cab which provides complete accessibility to mechanical parts in less than 30 seconds. According to the White Company, however, the power lift cab is only one of several equally important features incorporated in the design of



their new Super Power 300 series motor trucks.

The extreme forward position of the cab permits a new load distribution, with more weight carried on the front axle. To take full advantage of this, a heavier capacity front axle is used with improved steering geometry. In the case of highway operation, this improved weight distribution is said to permit hauling up to 3000 lbs. more pay load than conventional designs.

The power lift cab in this series of trucks is actuated by turning a key. The cab lifts under power, through a wide arc, tilting forward. When the cab is lifted, all component parts of the chassis from the front end back to the body are laid bare. This accessibility assures better service workmanship and attention to service details that otherwise are neglected.

● Tires with Nylon Cords

The B. F. Goodrich Company, Akron, O., is now producing off-the-road tires made with nylon cord throughout and including a nylon shock shield. According to the manufacturer, the tire body strength is greatly increased because the same number of plies are being maintained in each tire, and the nylon cord is twice as strong as the rayon previously used.

Tires in which the new construction is utilized come in sizes from 11.00-20 in 14 ply rating to 21.00-24 in 24 ply rating.

Dr. Willard H. Dow, who had served the Dow Chemical Company as president, chairman of the board and general manager, was killed in a plane crash on March 31.

As a result of the death of Dr. Dow several changes have been made in the executive personnel. Earl W. Bennett was named chairman of the board, and Leland I. Doan became president. Mr. Bennett retains his post of chairman of the finance committee. Mr. Doan was formerly director of sales.

A. P. Beutel and Russell L. Curtis were given newly-created posts as vice-presidents. Dr. Mark E. Putnam was appointed general manager and a member of the executive committee.

Calvin Campbell, sole survivor of the plane crash in which Dr. Dow, Mrs. Dow and three others were killed, was elected secretary. He had been the head of the firm's legal department. New treasurer appointed is Carl A. Gerstecker.

Further expanding their program of national distribution, Salsbury Corporation of Los Angeles, Calif., recently announced the appointment of the following new distributors throughout the United States:

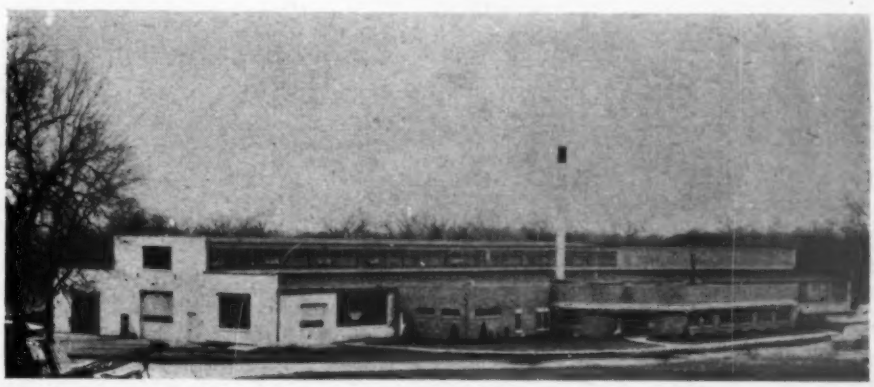
Preston Faller, Seattle, Wash., for Washington, Oregon, Idaho, and British Columbia; H. G. Davis, Inc., Boston, Mass., for the New England states; Industrial Power Equipment Company, Kansas City, Mo., for Kansas and western Missouri; Thomas C. Ingerman Company, Milwaukee, Wis., Wisconsin; George C. Lever Company, Jersey City, N. J., for southern New York state and northern New Jersey; Rapids Handling Equipment Company, Buffalo, N. Y., for western New York state; Wiese Planning & Engineering, St. Louis, Mo., for eastern Missouri and southern Illinois; C. H. Collier Company, Dallas, Tex., for Texas; R. F. Harrelson & Associates, Birmingham, Ala., for Alabama and northwestern Florida; and March Equipment Company, Chicago, for northern Illinois.

Lippmann Engineering Works of Milwaukee, Wis., manufacturers of equipment for pits, mines and quarries, has expanded its production and is ready to consolidate distribution in the Great Lakes region. Areas in which qualified distributors are invited to contact Lippmann are: Michigan (except Upper Peninsula), Iowa, northern Ohio, Pennsylvania, western New York, and Ontraio.

The Lippmann line includes Grizzly King and Capaci-King overhead eccentric jaw crushers up to 36x48; Screen-All positive eccentric vibrating screens; Gyra-Gnome gyratory crushers; pulverizers; portable washing plants with capacities up to 120 yards per hour; Circuit Rider self-propelled crushing plants that can be operated by one man; portable and stationary belt conveyors.

Other products include roll crushers, feeders, elevators, revolving screens, bins, hoppers, sand drags, classifiers and tanks, log washers, scrubbers, Speed-Flite portable loaders and a complete range of materials-handling equipment.

David M. Finley, chief accountant of Bemis Bro. Bag Co., has been elected assistant secretary of the company. He has been with the Bemis accounting and auditing department since 1937.



● The Schield Bantam Co., Inc., Waverly, Ia., manufacturers of the Truck-Mounted Schield Bantam, have recently completed their new plant and modern offices. Manufacturing floor space has been doubled and new equipment installed. This new larger plant will enable the company to step up production and better serve customers' needs.

V. L. Snow has recently been appointed domestic sales manager of The Euclid Road Machinery Co., succeeding the late W. W. Paape. Mr. Snow was connected with the Columbia Axle Co.

J. W. Bloomquist

V. L. Snow

of Cleveland in engineering and sales capacities before joining the engineering department of Euclid in 1935.

Succeeding Mr. Snow as assistant sales manager is J. W. Bloomquist, who joined Euclid as district representative for the Minnesota territory in 1945. Mr. Bloomquist was with Borchert-Ingersoll, Inc., mining and construction equipment distributors for more than ten years.

The St. Regis Paper Company has announced that its new four-color printing presses are now in operation, printing multiwall paper bags. Designed by Edwin E. Burroughs, chief engineer of the St. Regis Multiwall Bag Division, and constructed at the company's machine and engineering plant at Oswego, N. Y., two of the presses are now in use at the firm's Pensacola, Fla., plant and a third at the new San Leandro, Calif., plant.

Alfred S. Osbourne and Louis A. Mertz have been elected directors of Dravo-Doyle Company, a subsidiary of Dravo Corporation, at Pittsburgh, Pa. The company engages in the sale and rental of new and used construction equipment.

New district manager of industrial truck sales in the Western Division of the Hyster Company at Portland, Oregon is William Kilkenny.

W. Kilkenny

The territory under his jurisdiction includes 11 Western states, four western provinces of Canada, as well as all of Alaska and the Hawaiian Islands.

Appointment of the Bornell Supply Company, Inc., of 180 East Main Street, Piqua, O., as distributor of Hewitt industrial rubber products in Piqua and surrounding territory has been announced here by J. H. Hayden, vice-president in charge of sales, Hewitt-Robins Incorporated, Buffalo, N. Y.

R. W. H. Kuhlman has been appointed general supervisor of advertising and sales promotion for the Industrial Power Division of the International Harvester Co., succeeding Donald Jones. J. R. Roberts will take over the former duties of Mr. Kuhlman as supervisor of sales promotion.

Thomas P. McNiesh and Hall S. Derkin were recently appointed to handle Hewitt Rubber Division mechanical rubber products. Mr. McNiesh has been assigned to the Los Angeles territory, and Mr. Derkin will be located in Chicago.

Vulcan Iron Works of Wilkes-Barre, Pa., announces the appointments of J. F. O'Brien as general sales manager and C. A. Netter as general purchasing agent, effective April 25, 1949. Both Mr. O'Brien and Mr. Netter have been associated with the company in responsible capacities for a number of years.

The McLean Company, Cleveland, O., for 20 years exclusive distributors for Barber-Greene Company, manufacturer of materials-handling equipment and road building machinery, Aurora, Ill., held open house in its large, modern new office, service headquarters, and warehouse on April 29. The recently completed new building and yard is located at 3525 Lakeside Avenue, near the heart of the Cleveland business area.

PIT AND QUARRY

Research Department

538 South Clark St., Chicago, Ill.

Please send me catalogs and Prices concerning the following items checked below:

- ☐ Admixtures, Concrete
- ☐ Agitators, Slurry
- ☐ Aggregate-Bituminizing Plants
- ☐ Air Cleaners
- ☐ Air Compressors
- ☐ Asphalt Mixing Plants
- ☐ Asphalt Mixers
- ☐ Bag Filling and Weighing Machinery
- ☐ Bags, Cloth
- ☐ Bags, Paper
- ☐ Balls, Steel
- ☐ Barges, Steel
- ☐ Batching Equipment
- ☐ Belt Dressing
- ☐ Belt Fasteners
- ☐ Belting, Conveyor and Elevator
- ☐ Belting, Transmission
- ☐ Belt Tighteners
- ☐ Bin, Gates
- ☐ Bins
- ☐ Blasting Powder
- ☐ Blocks, Friction
- ☐ Bodies, Motor Truck
- ☐ Buckets, Clamshell
- ☐ Buckets, Conveyor and Elevator
- ☐ Buckets, Dragline
- ☐ Buckets, Orange Peel
- ☐ Cableways, Stackline
- ☐ Calcining Machinery
- ☐ Caps, Blasting
- ☐ Car Dumpers
- ☐ Car Pullers and Movers
- ☐ Carriers, Belt
- ☐ Cars, Dump
- ☐ Cars, Kiln
- ☐ Castings
- ☐ Cement Colors
- ☐ Cement Plants, Bulk
- ☐ Chains, Conveyor and Elevator and Dredge
- ☐ Chains, Power Shovel, Crane
- ☐ Chains, Transmission
- ☐ Classifiers
- ☐ Clutches
- ☐ Clutches, Magnetic
- ☐ Concrete Block Machines
- ☐ Concrete Brick Machines
- ☐ Concrete Joist Machines
- ☐ Concrete Stave Machines
- ☐ Concrete Plants, Ready Mix
- ☐ Cones, Washing
- ☐ Connectors, Wire Rope
- ☐ Conveyors, Apron
- ☐ Conveyors, Belt
- ☐ Conveyors, Concrete
- ☐ Conveyors, Screw
- ☐ Conveyors, Skip
- ☐ Coolers
- ☐ Coupling, Flexible
- ☐ Cranes, Locomotive
- ☐ Cranes, Overhead Traveling
- ☐ Cranes, Truck
- ☐ Crushers, Cone
- ☐ Crushers, Gyratory
- ☐ Crushers, Hammer
- ☐ Crushers, Jaw
- ☐ Crushers, Ring
- ☐ Crushers, Roll
- ☐ Cutter Heads, Dredging
- ☐ Derricks
- ☐ Draglines, Cableway
- ☐ Draglines, Revolving Boom
- ☐ Dredges, Hydraulic
- ☐ Dredges, Ladder
- ☐ Drills, Air
- ☐ Drills, Blast Hole
- ☐ Drills, Diamond
- ☐ Drills, Hand Hammer
- ☐ Drills, Sharpening Machinery
- ☐ Dryers, Rotary
- ☐ Dust Collecting Systems
- ☐ Dynamite
- ☐ Elevators, Bucket
- ☐ Engines, Diesel
- ☐ Engines, Gasoline
- ☐ Engines, Hoisting
- ☐ Explosives
- ☐ Feeders
- ☐ Filters
- ☐ Filters, Oil
- ☐ Fire Brick
- ☐ Frogs and Switches
- ☐ Fuses, Blasting
- ☐ Fuses, Detonating
- ☐ Gears
- ☐ Grease
- ☐ Grinding Balls
- ☐ Grizzlies
- ☐ Guns, Hydraulic
- ☐ Hardfacing Alloys
- ☐ Hoists
- ☐ Hoists, Skip
- ☐ Hose, Air, Water
- ☐ Hose, Suction
- ☐ Hydrators, Lime
- ☐ Idlers, Conveyor
- ☐ Kettles, Calcining
- ☐ Kilns, High Pressure Steam
- ☐ Kilns, Rotary
- ☐ Kilns, Vertical
- ☐ Lift Trucks
- ☐ Lime Putty Plants
- ☐ Lining, Kiln
- ☐ Loaders
- ☐ Loaders and Unloaders, Box Car
- ☐ Locomotives, Diesel
- ☐ Locomotives, Gasoline
- ☐ Locomotives, Steam
- ☐ Log Washers
- ☐ Lubricants
- ☐ Meters, Water
- ☐ Mills, Ball
- ☐ Mills, Compartment
- ☐ Mills, Tube
- ☐ Mixers, Concrete
- ☐ Molds, Concrete
- ☐ Motors, Electric
- ☐ Motor Trucks, Ready-Mixed Concrete
- ☐ Nozzles
- ☐ Nozzles, Spray
- ☐ Off Bearers, Pneumatic
- ☐ Oilers, Pallet
- ☐ Pallets, Concrete Block
- ☐ Perforated Plate
- ☐ Pipe, Spiral Welded
- ☐ Pipe
- ☐ Poidometers
- ☐ Pulleys, Clutch
- ☐ Pulleys, Magnetic
- ☐ Pulverized Fuel Systems
- ☐ Pulverizers, Ball, Conical, Pebble
- ☐ Pulverizers, Hammer
- ☐ Pulverizers, Ring
- ☐ Pulverizers, Rod
- ☐ Pulverizers, Roll
- ☐ Pumps, Centrifugal
- ☐ Pumps, Deep Well
- ☐ Pumps, Dredge
- ☐ Pumps, Slurry
- ☐ Rails
- ☐ Refractories
- ☐ Rolls, Crushing
- ☐ Rope, Wire
- ☐ Safety Appliances
- ☐ Saws, Masonry
- ☐ Scales, Batching
- ☐ Scales, Moisture Meter
- ☐ Scales, Track
- ☐ Scales, Truck
- ☐ Scrapers, Dragline
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- ☐ Screens, Vibrating
- ☐ Separators, Air
- ☐ Separators, Dry Centrifugal
- ☐ Separators, Magnetic
- ☐ Shovels, Gasoline
- ☐ Shovels, Diesel
- ☐ Skips
- ☐ Sleeves, Dredge
- ☐ Slugs and Balls, Grinding
- ☐ Speed Reducers and Gears
- ☐ Sprockets
- ☐ Stokers
- ☐ Tanks, Concrete and Steel
- ☐ Tanks, Sand Settling
- ☐ Testing Equipment
- ☐ Thickeners, Slurry
- ☐ Track, Portable
- ☐ Track, Shifters
- ☐ Tractors, Crawler
- ☐ Tramways, Aerial
- ☐ Trippers, Belt
- ☐ Trippers, Tramway
- ☐ Unloaders
- ☐ Valves
- ☐ Vibrators, Electric
- ☐ Washers and Scrubbers, Sand, Gravel, Stone
- ☐ Weighers, Automatic
- ☐ Welding Machines
- ☐ Welding Rods
- ☐ Wheel Cars
- ☐ Winches
- ☐ Wire Cloth

Firm Name .....***Individual*** .....

Address .....***City*** .....***State***.....

W. F. Godejohn

William F. Godejohn was recently elected vice - president in charge of operations and a director of Harbison Walker Refractories Company. He has been assistant to the president since September, 1948, and was formerly Missouri district superintendent for Harbison - Walker with jurisdiction over the Vandalia and Fulton Works.

J. F. Kressler, former sales representative of Chase Bag Company's Cincinnati office, has been transferred to Detroit, where he will direct the operations of that office.

Several promotions have been announced by W. A. Jones Foundry and Machine Co. of Chicago. Joseph A. Marland, who has been handling sales in the Chicago territory has been made sales manager, and Thomas A. Jones has been appointed assistant sales manager. Joseph A. Guyer, who has been handling general work in the sales and advertising departments is now advertising manager.

George C. Summers, active in a sales capacity for many years with R. G. LeTourneau, Inc., heavy construction equipment manufacturer, has been named district sales representative for Kentucky, Michigan and Ohio, and for Ontario and Quebec, Canada.

Alfred I. Stuart has been appointed head of the Methods Engineering Department of the Hyster Company, Portland, Ore. He will assume full charge of methods engineering for Hyster's three plants in Portland, Ore., and Danville and Peoria, Ill.

Hiram A. Holzer, formerly president of the United Iron Works Company, Pittsburgh, Kan., died on March 27.

Charles L. Campbell, manager of the Philadelphia district of the Replacement Tire Sales Division of The B. F. Goodrich Company since 1936, has been appointed sales development manager of the Eastern Division, which comprises the Albany, New York, Boston, Massachusetts, Buffalo, New York, New York City, Pittsburgh and Philadelphia districts. Mr. Campbell is succeeded in the Philadelphia post by L. O. Veith, who had been for the last two years manager of the company's Harrisburg, Pa., retail store.

General American Transportation Corporation has appointed Ben King Duffy as its representative to handle Plate & Welding and Process Equipment Division sales in its Pittsburgh district. Mr. Duffy was formerly sales engineer for the Turbo-Mixer unit of General American.

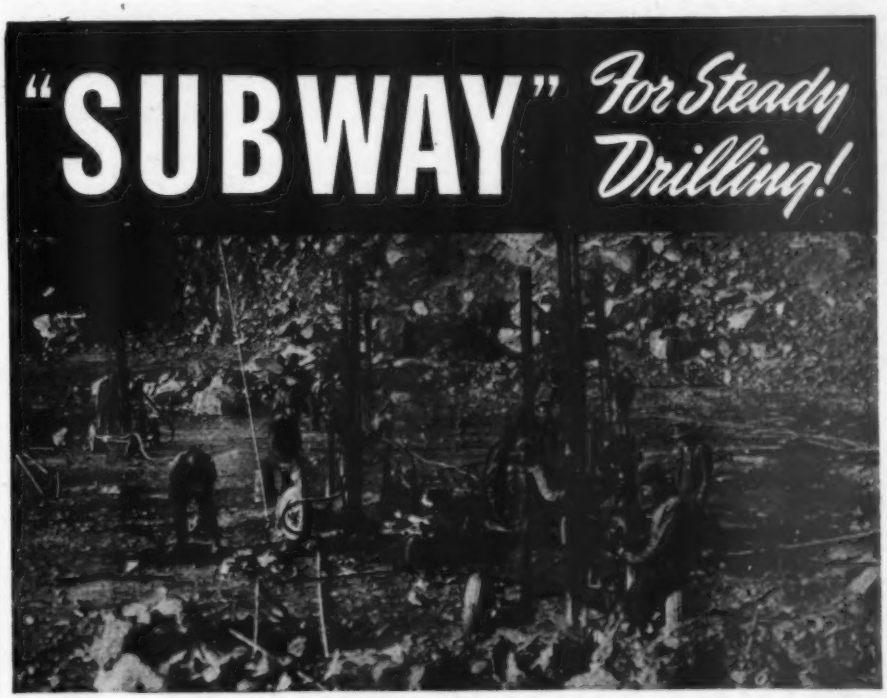
Lippmann Engineering Work's second Annual Special Sales and Service school was held recently for distributors and their salesmen at the factory in Milwaukee. The three-day period was devoted to demonstration and instruction on new improvement and equipment and the introduction of the whole Lippmann line to new sales people.

International Paper Company's Bagpak Division announces that effective May 9 the following changes will be made in the personnel of its branch sales offices:

A. C. Clarke will become district sales manager in Atlanta, Ga. Mr. Clarke has been associated with the division for many years in Chicago and Boston. C. C. Crain will continue to operate out of Atlanta. W. D. Peters, who has also been operating out of Atlanta, will join the sales organiaztion of the head office in New York. J. A. Groden will become district sales manager in Boston. Mr. Groden is now connected with the head office in New York.

To provide better repair, maintenance, and warehousing facilities for its customers in Virginia, General Electric will establish a new apparatus service shop and warehouse in Richmond late this summer.

Set up to service and repair motors, generators, transformers, control devices, switchgear, and other apparatus, the new service shop will contain the latest in machine tools.



ALL-SYNPLASTIC WRAPPED DUCK CONSTRUCTION SIZES - ½" to 1½"

A Goodall "Standard of Quality" hose, built to withstand the rough service involved in quarry drilling and handling. Red rubber cover is highly resistant to severe abrasive wear. *Balanced construction* assures equal durability for cover, carcass and tube. Result: longer service, with important savings in hose replacement costs.

Contact Our Nearest Branch for Details and Prices

GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles San Francisco • Seattle • Salt Lake City • Denver • Houston • Distributors in Other Principal Cities

Est. 1870

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Recently a land owner wrote, as follows: "I want to know if I can cancel a lease I gave to a man who assigned his lease to a sand and gravel company? This lease does not have any date when it expires and I maintain that it is void for this reason. And I want to know if I can cancel this lease which gives me a royalty of 5 cents per yard for gravel and no price for sand. This company is removing gravel and also sand from my land. Will pay you for advice."

This land owner was advised without charge that he cannot cancel the lease. Here is a late and outstanding higher court decision covering various points of law having special interest to readers.

In *Walker v. Fitzgerald*, 38 So. (2d) 173, reported March, 1949, the testimony showed facts, as follows: A land owner named Walker signed a gravel lease contract purporting to convey to one White "all the sand and gravel" on a tract of land clearly described in the lease. The lease contract also provided for payment of four cents per yard royalty on *gravel* mined from the premises by White. However, the contract did not specify what royalty White was to pay Walker for *sand* which he may remove from the land. However, *no term* of the lease contract was specified. In other words, the lease contract did *not* contain a clause as to when it would terminate or expire. And the lease contract did *not* contain a clause stating that the lease was *not* to be assigned.

Soon afterward White assigned the lease to an operator named Fitzgerald, who moved in the necessary machinery and equipment and began to remove gravel and sand from the property. Walker filed suit to invalidate and cancel Fitzgerald's lease. Walker contended that the lease was void because it had no fixed term, and also because Fitzgerald had removed sand from the land when, in fact, the contract did not specify any payment for sand. During the trial Fitzgerald proved that he actually mined large quantities of gravel and Walker accepted substantial royalties therefor. The higher court refused to cancel the lease, and said:

"Having determined the defendant's (Fitgerald's) removal of sand and gravel from plaintiff's land was in the nature of a lease, it follows that defendant (Fitzgerald) should pay royalty for all materials removed from plaintiff's land. The royalty for gravel was set in the instrument itself at four cents per yard. No royalty amount was set for sand. There is no evidence that sand and gravel are of the same value. We therefore conclude that the value for sand is two cents per cubic yard . . . Since plaintiff (Walker) approved the operations which had been carried on for several years prior and since plaintiff (Walker) neither alleged or proved that defendant (Fitzgerald) was not complying with his obligations and neither alleged or proved that defendant (Fitzgerald) had in any manner ceased to actively operate the gravel pit on plaintiff's land, plaintiff (Walker) was not entitled to cancellation of their agreement with defendants."

For the benefit of readers who may desire to write a valid and enforceable lease contract, here is the clause held valid in every respect by this higher court, as follow:

"I do by these presents bargain, sell, transfer and convey, and deliver, with full warranty of title and subrogation to

EASY MANEUVERABILITY—RUGGED DEPENDABILITY

MINNEAPOLIS-MOLINE MM MODERN MACHINERY

INDUSTRIAL WHEELERS

Get More Work Done Per Hour.....

When you want to speed the job—do it with MM Industrial Wheellers. Operators of ready-mix concrete plants report loading 70-80 tons of gravel per hour with MM Industrial Wheelers on average hauls of 100 feet from stockpile to hopper.

Investigate these advanced-design features that assure you dependability on rugged jobs!

- Shuttle Gear for 6 forward and 6 reverse speeds up to 14.5 m.p.h.
- "Roller Spin Steering" has roller and needle bearings from steering wheel to ground.
- RTI high-compression valve-in-head engine with 150 fewer wearing parts.
- Extra strong heavy-duty clutches.
- Heavy cast front-wheel centers and fabricated H-type front axle.
- High turbulence combustion chambers and regulated cooling for extra power output.

See Your Nearest MM Dealer, Distributor or Write

MINNEAPOLIS-MOLINE
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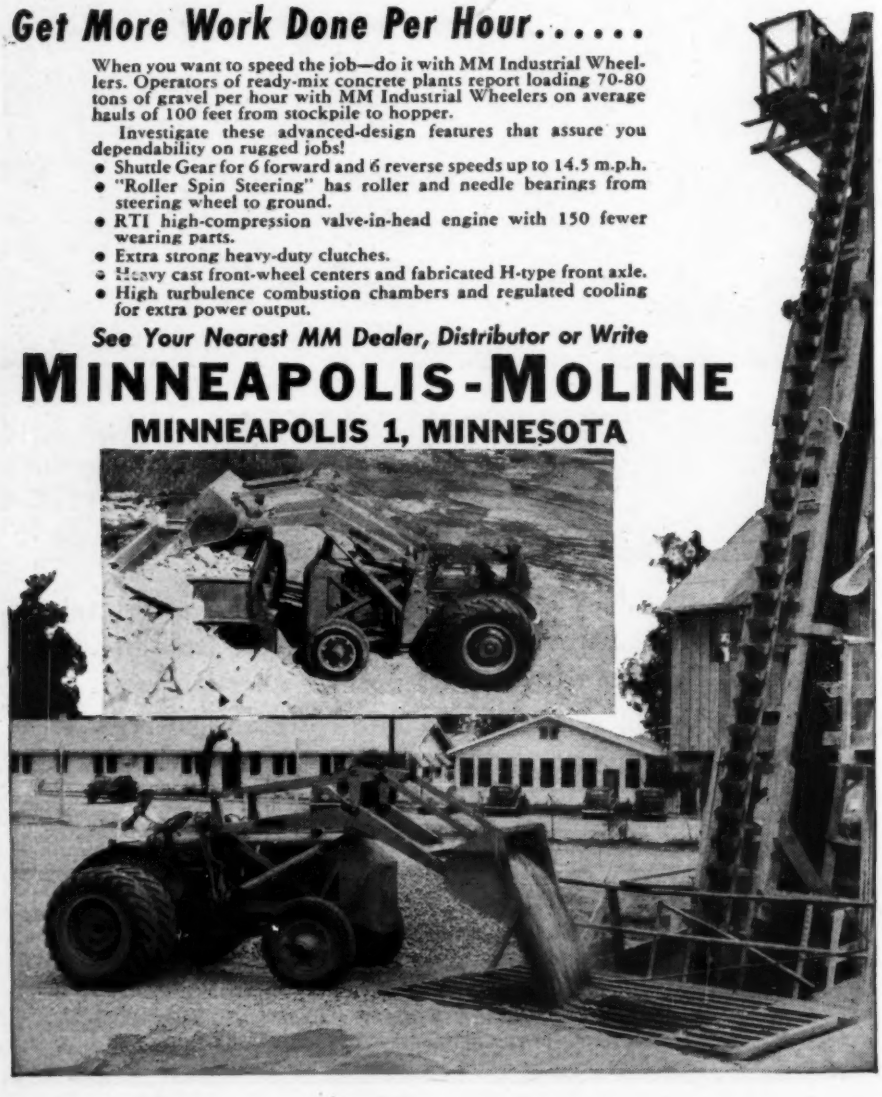

all rights and action in warranty they may have against former owners, and free from all encumbrances, unto (name of lessee) accepting and purchasing for himself, his heirs and assigns, and acknowledging possession and delivery thereof, the following property, to-wit: (hereinafter include description of property)."

Contract Not Clear

Under no circumstances should a contractor sign a contract to do specified work, unless the contract contains a clause that will guarantee payment *in consideration of the work* to be done. If the contract does *not* contain such a clause, the contractor should be certain that he will *not* be compelled to do more work than anticipated to finish the job. If the job calls for excavation work, the contractor should make "borings" to determine positively the character of the soil; otherwise he stands a good chance of suffering financial loss. On the other hand, according to a recent higher court, a contractor may recover payment for extra work specified in the contract, although he performs the work by means *different* from that stipulated in the contract.

For illustration, in *Sgarlat v. Griffith*, 36 Atl. (2d) 330, a contract was litigated that contained a clause: "If rock be found which would require removal by blasting, $1.10 per cu. yd. will be paid for by measurements of the architect and certificate furnished by him."

The contractor brought suit to recover extra compensation alleged to have been earned by paying for extra manual labor. He proved that rock was in the excavation, and in large quantity, which ordinarily would have required removal by expensive blasting not contemplated when he signed the contract. Although it was contended that the contractor could not recover extra payment, since he had used manual labor to remove the rock, the court held the contractor *entitled* to recover extra compensation.

This court explained that a contractor is entitled to payment for extra work contemplated in the contract, irrespective of the manner in which he performs such extra work.

Commission May Decide

According to a recent higher court, an employer has no legal right to interfere with the Industrial Commission deciding whether an employee may be entitled to receive compensation for an injury, nor may he file a valid suit for this purpose.

For example, in *State v. Cleveland Company*, 83 N. E. (2d) 213, an employer named Cleveland Company sued to prevent the Industrial Commission from paying compensation to an employee who had contracted silicosis in April, 1947. The employer proved that while the employee was employed by another company in 1943, a diagnosis of silicosis was first made; and a second diagnosis of silicosis was made in 1945. In spite of the employee's knowledge of having the disease he accepted employment with Cleveland Company in 1947.

The higher court decided that the

LORAIN ROLLED PLATE LININGS

Available in any Diameter, Length, or Thickness

U·S·S Lorain Rolled Steel Plate Linings are adaptable to any type of mill. They help increase production, save time, cut costs in these clinker grinding mills of the Universal Atlas Cement Company plant at Northampton, Pa.

The high tensile strength of Lorain Plate Linings makes possible the use of thinner sections. This increases the effective mill diameter . . . and the output. Their simplicity of design and ease of handling speed up installation. They are lighter in weight, yet wear longer than cast linings. And since Lorain Lifting Bars and Plates are both interchangeable and reversible, the period of serviceability is greatly increased, maintenance costs are greatly reduced.

U·S·S Lorain Rolled Plate Linings are available through leading mill manufacturers whose names will be furnished upon request.

And to Make Better, More Economical Grinding Doubly Sure, Use U·S·S GRINDING BALLS

. . . . they're made to exacting specifications of hardness and toughness, to take the punishment of the longest, heaviest runs. They maintain a standard of quality that insures uniformly superior results. U·S·S Grinding Balls are available in all sizes from ¾" to 5" in diameter.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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USS

LORAIN ROLLED PLATE LININGS AND GRINDING BALLS

UNITED STATES STEEL

How workers look at safety goggles . . .

"Are they comfortable?"

The answer to that question in your plant will determine to a large extent how effective your safety program is.

MonoGoggle Style No. 1

To most workers, comfort—or the lack of it determines whether or not they wear goggles or carry them around in their pockets. Whether they need safety spectacles, heavy duty goggles or plastic eye protection for minor hazards—look to the WILLSON line for comfort that gets safety equipment worn. The lightest weight commensurate with safety in a given operation; a choice of sizes; adjustability for exact fit; anatomically shaped eye cups and frames; and other comfort features make WILLSON safety equipment "easy on the eyes."

DAILY REMINDERS

Such as Willson "Blind Man" Safety Posters keep workers aware of the need for wearing goggles. Supplies available on request.

WILLSON*

"Established 1870"

*T. M. Reg. U. S. Pat. Office

WILLSON PRODUCTS, INC., 102 THORN STREET, READING, PENNA.

employer had no legal right to file a suit which interfered with the Industrial Commission in deciding whether or not the employee was entitled to recover compensation under the State Workmen's Compensation Act. This court said:

"An employer is not denied protection of the law by reason of the fact that he is not given a right to review an order of the Industrial Commission awarding workmen's compensation."

Damages Refused

All higher courts agree on this law: An employee injured while attending to his regular duties may recover payment of compensation under the State Workmen's Compensation Act. However, an employee who sues his employer for damages cannot receive a favorable verdict, if he fails to prove that the injury resulted from the employer's negligence.

For illustration, in *Cerrato v. McGeorge Contracting Company,* 178 S. W. (2d) 247, the testimony showed that an employee while working for a contractor was killed when he accidentally came in contact with a live electric wire lying across a highway. The employee was employed by the contractor to haul gravel in his own truck from a gravel pit to the contractor's premises. Dependents of the deceased sued the contractor for damages. During the trial testimony was given which proved these facts. On the day of his death the employee reported for work at the usual time, but all the haulers were dismissed at 11:00 a. m. on account of weather conditions. A few hours later the employee decided to change a tire on his truck and while so doing he contacted a live electric wire which had been strung by employees of an electric company.

It was argued that the contractor was liable in damages for death of the employee because the accident happened on the contractor's property.

The higher court held that since negligence of the contractor did not cause the death of the employee, the contractor was not liable in damages.

For comparison, see *Hunter v. Summerville,* 169 S. W. (2d) 579. Here a contractor agreed to furnish transportation to employees to and from a job. An employee was injured while being transported in the contractor's vehicle.

In this case the employer was held liable in damages for injuries sustained by his employee, because the injury was caused by negligence of the contractor.

See also *Tigertail Quarries, Inc., v. Ward,* 16 So. (2d) 812. In this case the higher court held a wife entitled to receive compensation under the State Workmen's Compensation Act for death of her husband resulting from an accidental injury received in the course of the employment. In this case it was not proved that the employee's death resulted from negligence of the employer. This court explained that any employee injured while attending to his regular duties may recover compensation under the State Workmen's Compensation Act, but where a suit is filed against an employer *for damages,* no recovery can be

had unless the testimony shows that the injury resulted from negligence of the employer.

Pedestrian Is Injured

The same relative law is effective with respect to pedestrians and other persons injured through negligence of a contractor. Such persons may sue and recover damages from the contractor.

For illustration, in *Eagles v. National Company, Inc.*, 45 N. E. 402, it was shown that a contractor's employee was engaged in installation work upon a staging erected upon the sidewalk. There was no covering whatever on the staging.

A pedestrian felt something drop into his eye, and felt a severe pain and burning sensation. He visited a doctor who removed several particles of foreign matter from his eye. The particles were bits of cement. Severe injury resulted to the pedestrian's eye, and he sued the contractor for damages. In view of the fact that the contractor's employee had *not* taken precaution to cover the staging to prevent cement from falling through cracks onto pedestrians, the higher court held the contractor liable in damages.

Broker Sues Quarry Owner

Frequently brokers and sellers of equipment disagree on payment for services rendered by the broker who made a sale. If the contract is in writing, the court will quickly determine the rights of the parties; but if the agreement is verbal, the jury will decide the issue.

For example, in *Bliss v. Griffiths,* 34 N. W. (2d) 842, the testimony showed facts, as follows: One Griffiths was engaged in the excavating and limestone business and owned a lime quarry where he used heavy machinery. Griffiths owned a Lima shovel for which he paid $16,022.09, and a rock crusher. He desired to sell both the shovel and the crusher, and he and a broker named Bliss had some conversation regarding it. Griffiths wanted to sell the shovel for $16,000 and the crusher for $12,000.

Bliss sold the shovel for $16,000 and demanded Griffiths to pay him a commission of 10 percent or $1,600.00. Griffiths refused to pay Bliss, who filed suit.

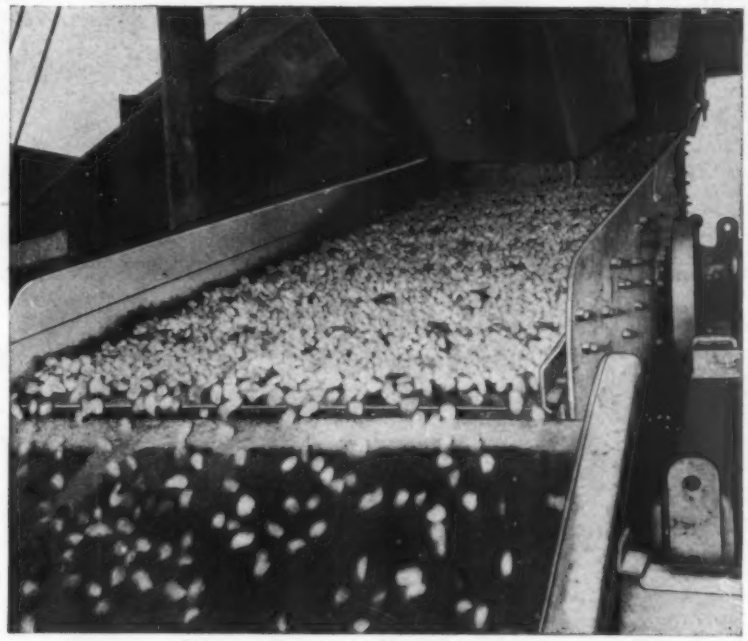
During the trial Bliss convinced the jury that Griffiths had promised to pay 10 percent commission on the sale of the equipment, although Griffiths testified that the only agreement he had made with Bliss was that the latter could have as compensation all he could get for both the shovel and crusher over $28,000.00. On the other hand, Bliss testified that Griffiths had promised to pay him 10 percent commission on any and all sales he assisted Griffiths to make.

The jury allowed Bliss $1,600.00 damages, plus $135 costs. The higher court approved the verdict, and said:

"It was for the jury to determine the credibility of the witnesses."

Hence, in a legal controversy involving a verbal contract the litigant who convinces the jury that his testimony is most important and truthful will win the suit.

Here's Accurate Sizing at 3½ Tons A Minute



This SECO Vibrating Screen Now in 11th Year of Service for B. V. Hedrick Gravel and Sand Co., Lilesville, N. C.

Here's another example of how Seco vibrating screens are making screening more profitable for operators. The positively controlled, true circular action of a Seco is your assurance of accurate sizing, high tonnages and low maintenance.

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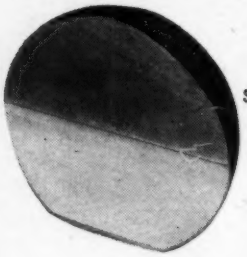

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Contributory Negligence

Modern higher courts consistently hold that an employee or other person, injured through *his own negligence* cannot sue and recover damages from an employer.

For example, in *Sanders v. McMichael,* 197 Pac. (2d) 280, a truck driver was burned to death when the truck he was driving overturned, caught fire and burned. Dependents of the truck driver sued the employer for damages, alleging that the employer was liable in damages because he permitted the truck to be in a bad state of repair and the brakes or wheels locked on the truck, and the gasoline tank was not fitted with a cap to prevent the fuel from running out and catching fire when the truck overturned.

The higher court refused to hold the employer liable, saying that the truck driver was contributory negligent in driving a truck in disrepair.

Also, see *Rain v. American, Inc.,* 214 S. W. (2nd) 109. Here the testimony showed that an employee was seriously injured as he attempted to board his employer's truck. He sued the employer for damages in the sum of $53,000.

The higher court refused to award damages, saying that the testimony showed that the employee's injuries were the direct result of willful misconduct and intoxication on his part.

Then the employee sued for compensation under the State Workmen's Compensation Act. The higher court disallowed this claim also.

Adverse Possession

The law term "Adverse Possession" means that some one has without consent of the owner of land, and without payment, acquired legal ownership to the land. This legal ownership may be established by a person using or fencing in another's land for a period specified by the law of the state in which the land is situated.

For instance, in *Young v. Newbro,* 200 Pac. (2d) 975, the testimony showed facts, as follows: A man named Teel is in the sand and gravel business. He put a bulldozer into an area and attempted to take some of the gravel, and one Young stopped him. A suit ensued. During the trial testimony was given which proved that the land in dispute actually had been purchased by Teel. The survey showed that the person who sold the land to Teel was, according to county records and plats, the real and legal owner. However, further testimony showed that in 1935 Young, believing the land belonged to him, built a boundary fence around it. He began to clear the area, and, as he cleared, he scattered seed over the land for pasture. Later Young took the fence down but continued to use the land.

In view of this testimony the higher court held that Young is the legal owner of the land and that Teel has no right or interest in the land. This court said:

"During the years that the fence was in existence, the land was used for

pasturage, but, from the time respondent (Young) first went into possession, up to the date of trial, he held and occupied the land as owner, making such continuous use thereof as was consistent with its character."

Innocent Purchaser Penalized

Considerable discussion has arisen from time to time over the legal question: If an innocent purchaser of stolen quarry equipment refuses to deliver up possession to its *real* owner, can the latter recover the equipment *plus* damages? The answer is yes, although the rental may be *more* than the actual value of the equipment.

For example, in *Guerin v. Kirst,* 192 Pac. (2d) 120, the testimony showed that a man named Grove purchased a caterpillar tractor from a dealer named Guerin. The sale was made under a recorded conditional contract. Grove made a down payment and agreed to pay the balance on the monthly basis.

Soon afterward Grove, who had not fully paid for the tractor, sold it to one Kirst. Guerin found the tractor in the custody of Kirst, who refused to give up possession to Guerin because Kirst had paid Grove *without knowing* that the latter did not own the equipment and had not paid fully the agreed contract price. Guerin sued Kirst for possession of the tractor, plus $9,075 rental during the time Kirst used the tractor while the suit was being litigated. The higher court held in favor of Guerin, and said:

"Respondent (Kirst) should pay the established reasonable or usable rental value of the tractor from June 10, to the date of judgment, substantially 11 months, aggregating $9,075, less the expense of its upkeep. Appellants are entitled to such damages as well as to the possession of the tractor, worth $6,000, notwithstanding respondent's (Kirst's) ignorance of the reservation of title by them."

Also, see *Ferris v. Cooper,* 1932, 13 P. (2d) 536, 537. Here the owner sued to recover possession of his equipment. Judgment was given to him against the one in possession for $1,200, the value of the equipment, plus $800 for its rental value for a period of seven months it was in possession of the party who claimed but failed to prove legal ownership.

On the other hand, see *Mutch v. Long Beach Company,* 190 P. 638. Here it was shown that a purchaser of a stolen tractor refused to deliver up possession to its original owner and held it *without driving it* every day before the court ordered him to give up possession to the legal owner.

This court refused to include as damages the rental value of the tractor for two reasons. First the testimony showed that the tractor had not been run by its possessor, and second the real owner did not prove that he was damaged by refusal of the possessor to give up possession of the tractor.

Quite obviously, this is an unusual decision, and may have been rendered partly through sympathy for the one who had in good faith purchased the tractor and finally forfeited the money he had paid for it when the court ordered him to deliver it up to the real and legal owner.

Defects Trifling

It is well established law that if a seller breaches a sale contract as to the quality of equipment, the purchaser may rescind the contract, return the merchandise and recover the full purchase price, plus reasonable damages. However, according to a recent higher court the law is different with respect to machinery or equipment having minor defects.

For example, in *DeFilipps Company, Inc. v. Kris Company,* 56 Atl. (2d) 534, the testimony showed facts as follows: A purchaser purchased a conveyor, and it was set up and adjusted. Soon afterward the purchaser inspected and accepted the machines and mailed the seller a check for the balance due. A short time thereafter the purchaser notified the seller of certain defects in the machines.

In subsequent suit the purchaser proved that he had expended $75 in an attempt to correct the defects. Also, there was other evidence that the defects could be corrected with a further expenditure of $25.

In view of this testimony the higher court held that the purchaser must keep the machines but that the seller must pay the purchaser $100.00, cost of repairs. The court said:

"The court determined there was sub-

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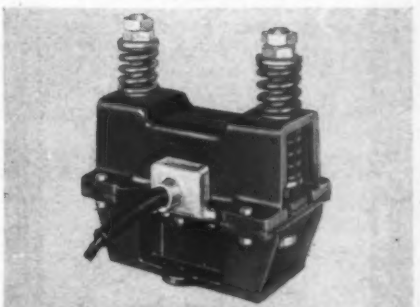

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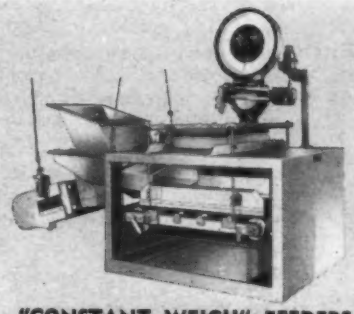

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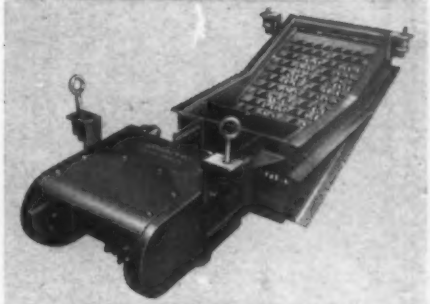

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stantial acceptance of the machines, and although there were minor repairs to be made, consisting of supplying bronze bearings, correcting irregular channels and leveling the legs, and adding equipment for oiling, all could be done for the additional sum of $25. The court gave judgment for the contract price, minus a fair allowance to make good these defects. The acceptance and retention of the conveyors by the appellant (purchaser) justified this result."

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 86889—Proposed to establish on rip rap stone, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Bedford, Ind., to New Harmony, Ind., 177 cents per net ton.

Docket 86697 (2)—It is proposed to establish on stone, fluxing, furnace, or foundry, melting or refractory (unburned), in bulk in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Melvin, O., to Ironton, O., 156 cents; Jackson and Portsmouth, O., 137 cents and Mt. Vernon, O., 169 cents. This is the gross ton rate.

Docket 86898 (1)—Proposed to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel, in open-top cars only, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Cayuga, Ind., to Broston, Mabel, Mortimer, Metcalf and Melwood, Ill., 129 cents per net ton.

Docket 86909 (2)—Establish on stone, crushed, in bulk in open-top cars, carload minimum weight 90 percent of marked capacity of car except that when cars are loaded to full cubical or visible capacity, actual weight will apply from Lima, O., to Kalamazoo, Mich., 194 cents net ton.

Docket 86910 (2)—Proposed to establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Coshocton, O., to Alexandria, Ind., 227 cents net ton.

Docket 94923 (2)—(a) Proposed to establish on limestone, agricultural or ground, in box cars, carload minimum weight 60,000 pounds from Durbin, O., to Louisville, Ky., and New Albany, Ind., 294 cents per net ton; (b) limestone, agricultural, unburned, in bulk, carload, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply from Durbin, O., to Louisville, Ky., and New Albany, Ind., 205 cents net ton.

Docket 86925 (2)—Proposed to establish on sand, all kinds and gravel, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Howard, O., to Logan, O., 161 cents per net ton.

GENERAL FREIGHT TRAFFIC COMMITTEE

Eastern Railroads

Bulletin G-226 (Shipper)—Lime, common, hydrated, quick or slaked, carload, minimum weight 50,000 pounds, from Carey, O., to Sarnia, Ontario, 25 cents and Windsor, Ontario, 23 cents per 100 pounds, including ExParte 162-B and 166-C increases but subject to Tariff of Emergency Charges X-168. Reason: Comparable with rates applying from and to other points.

Bulletin G-228 (Shipper) — Limestone, ground or crushed, unburned, carload, minimum weight 60,000 pounds from Marlo, Mosher, and Ste. Genevieve, Mo., to Huntington, W. Va., $3.92 per net ton in open cars and $4.37 per net ton in closed cars, including ExParte 162-B and 166-C increases but subject to Tariff of Emergency Charges X-168. Present rates combination. Reason: On same basis as rates applying from and to other points.

PACIFIC FREIGHT TARIFF BUREAU NORTH PACIFIC COAST FREIGHT BUREAU JOINT DOCKET

Docket J. T. 412—Lime (calcium), common (hydrated), quick or slaked, carload, from Westend, Calif., to Seattle and other group 28 points. Pacific Freight Tariff Bureau 1-S. Request for rates of 47 cents per hundredweight, minimum weight 100,000 pounds and 50 cents per hundredweight, minimum weight 80,000 pounds, including X-162-B and X-166-C increases.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-815—Proposed to establish a rate on agricultural limestone (having value for purposes of soil treatment only) carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight, but not less than 60,000 pounds, will apply from Grafton, Ill., to Cairo, Ill. Present: Combination. Proposed: $1.90 per net ton, plus X-168 in closed equipment.

$1.74 per net ton, plus X-168 in open equipment.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 47943 (1)—Lime, Missouri to Florida. Establish rate of 860 cents per net ton, minimum weight 30,000 pounds, and rate of 715 cents, minimum weight 50,000 pounds from Mosher and Ste. Genevieve, Mo., to Wakulla, Fla., and points grouped therewith in Southwestern Freight Tariff Bureau tariff 700-C (Southern Group Basis) ICC 995. Not subject to tariffs X-162-B and X-166-C.

Docket 48024 (1)—Proposed to establish a rate on lime, Limedale Spur, Ark., to Florida, $5.87 per net ton, minimum weight 30,000 pounds and rate of $4.70 per net ton, minimum weight 50,000 pounds carloads, to Wakulla, Fla., and points grouped therewith in Southwestern Freight Tariff Bureau 700-C.

Docket 48126 (1)—Establish a rate of 741 cents per gross ton on phosphate rock, Florida to Pittsburgh, Kan., from Bartow, Fla., and points grouped therewith.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1074—Proposed to establish a rate of 99 cents per ton of 2000 pounds on sand and gravel, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full capacity actual weight, but in no case less than 40,000 pounds will apply from Verona, Wisconsin to LaCrosse, Wisconsin. Not subject to X-162 and X-166 but subject to X-168 increases.

Docket E-41-1079 (Shipper)—Sand and gravel, carload; stone, or rock, broken, crushed or ground and rip rap, carload minimum weight 90 percent of marked capacity of car, but not less than 50,000 pounds per car. To Riverdale, Junction, N. D., from Alexandria, S. D., 15 cents; Mobridge, S. D., 14 cents per 100 pounds.

Docket E-41-1084 (Shipper)—Proposed to establish a rate of 260 cents per ton of 2000 pounds, in open cars, minimum weight 90 percent of marked capacity of car, from Loring, S. D., to Torrington and South Torrington, Wyo. Not subject to ExParte Tariffs X-162 and 166 but subject to ExParte Tariff X-168.

Lehigh Portland Cement Co. Announces Safety Committees

Lehigh Portland Cement Company safety planning is well organized and all-inclusive, a fact which strikes the reader of the *Lehigh News Conveyor* at once. A recent issue of this effective house organ carried the roster of plant safety committees for 1949. It was an impressive list. Chairman of committees at Lehigh plants are as follows:

Alsen (N. Y.), E. L. Snyder; Birmingham (Ala.), H. B. Burks; Buffalo (N. Y.), J. B. Zook; Fogelsville (Pa.), R. A. Moritz; Fordwick (Va.), H. A. Zeliff; Iola (Kan.), R. E. Jones; Metaline Falls (Wash), A. W. Schaeffer; Mitchell (Ind.), H. F. Shellenberger; Oglesby (Ill.), P. A. Groll; Ormrod (Pa.), John T. Lynn; Sandt's Eddy (Pa.), George W. Hannaman; Union Bridge (Md.), Raymond Wilson; Mason City (Ia.).

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1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
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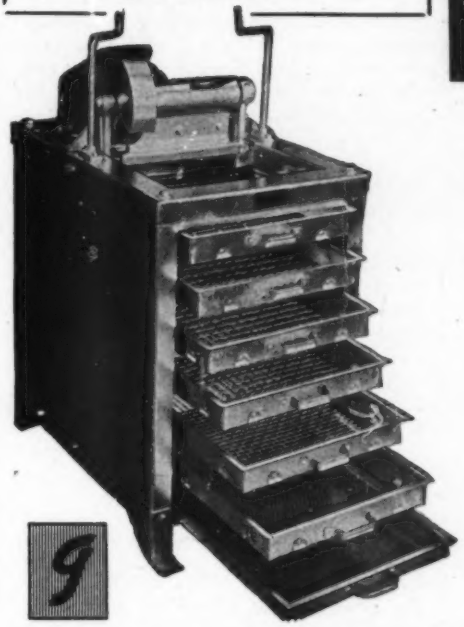

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• This machine is designed for the efficient sizing of test samples of crushed stone, gravel, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

Smaller amounts of very fine materials may be handled efficiently and the screen used for research or other special mass separation jobs down to 100-mesh or finer.

Where exacting specifications are required the Gilson Screen eliminates guesswork — avoids errors and reduces operating delays. A controlled and truly guaranteed product is now possible with the Gilson Testing Screen. For fast accurate sizing of coarse or fines from 4" to 200-mesh specify a Gilson Testing Screen.

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That's right, honey, they're Crosby Clips . . . so you won't weasel out of this engagement!

9902

Industry buys more **CROSBY CLIPS** than all other drop-forged fasteners!

Fasten wire rope with CROSBY CLIPS. Safe, simple, speedy . . . applied anywhere by one man with one wrench. *Drop-forged*, not cast. Hot dip galvanized. All sizes . . . for ⅛" to 3" wire rope. Distributors everywhere; made only by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minnesota.

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If it is, your Hoisting Equipment is at top Safety Efficiency

THE LATCH LOCKS THE LOAD

Make *safety certain* by specifying Laughlin Safety Hooks when you place your next order for hoisting equipment.

Is Your Present Hoisting Equipment Safe? You can boost its safety factor by replacing ordinary hooks with Laughlin's exclusive Safety Hook . . . there's one for every hoisting or materials-handling job. Available in capacities from ½ ton to 15 tons.

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THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

New Allis-Chalmers Facilities For Commercial Pump Testing

A new centrifugal pump test floor containing commercial pump test facilities described as "the most efficient and accurate ever developed," has been put into service at the West Allis works of the Allis-Chalmers Mfg. Co.

Designed to provide for both maximum testing accuracy and minimum testing time and expense, the new facilities will be of great importance to the company's long-standing policy of obtaining and maintaining on file complete performance data on every pump it builds.

The modern facilities include some new applications of equipment worked out by Allis-Chalmers engineers in conjunction with the equipment manufacturers, and some devices designed and built by Allis-Chalmers especially for this application.

Although the primary use of the new facilities will be for commercial pump tests, the data taken will be of value in improving pump design. Some research work will also be done on the new test floor, according to present plans.

Rock Products Mfg. Corp. To Erect New Plant at Ada

Plans to start construction of a new plant in Ada, Okla., about June 1 was announced by officials of the Rock Products Manufacturing Corporation. They stated that rock wool and other insulation products will be manufactured from materials supplied by the corporation's plant at Troy, Okla.

It was announced that plans for establishing the new industry in Ada would proceed on schedule despite the recent death of W. E. Ryder, president and founder of Rock Products Manufacturing Corp. Mr. Ryder's son, W. D. Ryder of Ada, has been in charge of the business since his father's retirement last year.

Lawrence "Dragon" Presents Series on Cement Making

The Lawrence Portland Cement Company's attractive house organ, *The Dragon*, is currently presenting a series of brief illustrated articles on the making of cement.

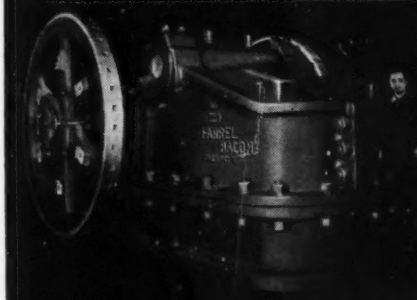
Article No. 1 (in the April issue) was headed with an aerial view of the firm's operation at Thomaston, Me. Below the photograph appeared a keyed diagram with a legend identifying the buildings.

The Mississippi Public Service Commission has approved a revised schedule of freight rates on sand and gravel, granting an average 5-cent reduction under current charges. The lowered schedule was accepted by the commission on the recommendation of rail carriers, who earlier had prepared the new scale on the basis of an agreement with sand and gravel shippers.

New FARREL-BACON CRUSHER has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help. BA-1



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Type "MR" 42" x 96" Double-deck

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Pennsylvania State College Dedicates Cornerstone Of Mineral Sciences Bldg.

March 25 was a red-letter day at Pennsylvania State College, for on that day exercises were held for the dedication of the cornerstone at the new Mineral Sciences Building, still under construction. Included in the new structure will be facilities for instruction in geophysics, geochemistry, geography, mineral economics, mineral beneficiation, steel making, and coal processing, as well as offices for the Mineral Industries Experiment Station and the Mineral Industrise Extension Services.

Among the speakers at the cornerstone exercises and the banquet which followed were the following: President Hilholland, Pennsylvania State College; Dean Edward Steidle of the School of Mineral Industries, Pennsylvania State College; J. B. Morrow, vice-president, Pittsburgh Consolidation Coal Co.; and Admiral W. W. Behrens, deputy secretary, State Department of Property and Supplies. Representatives of industry, the state government and its agencies, and organizations allied with the mineral industries also participated in the ceremonies.

The Mineral Sciences Building is the first unit of the proposed additions to the mineral industries group, which will provide for education and research in the earth sciences and in the mineral extractive and mineral utilizing industries of the state.

I.C.C. Raises Barge Rate For Texas Sulphur Shipments

The Interstate Commerce Commission recently revised the rail-barge rate structure on shipments of sulphur from Texas to Mississippi River and Great Lakes ports. The action resulted from complaints by barge lines and railroads that commission-approved differentials on sulphur from Texas mines to Galveston to Northern points were unfair.

The I.C.C. had earlier held the railroads should get 21 cents a 100 lbs. and barge lines 24 cents. The latest action allows the railroads 21 cents; but raises the share for barge shipments to 30 cents.

Company Magazines Feature Safety in Effective Appeals

If employees of nonmetallic minerals plants tangle with preventable accidents, it isn't usually the fault of their employers. Publications issued by firms such as the Ideal Cement Company, the Lehigh Portland Cement Company, Basic Refractories, Inc., and Consolidated Rock Products Company feature safety first, last and all the time.

Almost everywhere you look in these house organs, you will find safety slogans, news items about commendable safety records of workers, features like "The Driver's Creed," cartoon sketches and appeals for observance of safety rules.

This is the **SCALE . . .** *for Super-Service Weighing*

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It's Fast • Accurate • Economical

. . . AND, it fits right into the big-output plans of handlers and producers of raw and finished materials.

SCHAFFER Poidometers offer a complete solution to your problems for weighing, blending, feeding, mixing, recording, and proportioning bulk materials.

Built for sustained, low-cost service.

Available with total weight recorders, and remote controls for showing feed rate and changing feed rate.

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Write for "Better Stone Crushing" bulletin.

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50-TON ALL-STEEL HOPPER CARS

Capacity—110,000#
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Wine Door Locks
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Cars are completely repaired and will meet A. A. R. requirements.

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1000	Al. Chlrs.	ANY	2300	240
800	Westghse.	C.W.	6600	507
600	Gen. Elec.	I.M.	440	350
500	Al. Chlrs.	ANY	2300	514
400	Gen. Elec.	I.M.	2300	900
300	Westghse.	C.W.	2300	367
250	Cr. Wh.	——	440	900
100	Al. Chlrs.	ANY	440	720
50	Gen. Elec.	I.M.	440	1800
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SQUIRREL CAGE MOTORS

1250	Al. Chlmrs.	——	2300/440	3600
750	Gen. Elec.	K.T.	2300	390
400	Al. Chlrs.	Spl. pf.	2300	900
350	Westghse.	C.S.	2200	1800
250	Gen. Elec.	I.K.	2300	600
200	Westghse.	C.S.	440	720
150	Gen. Elec.	K.T.	2300	600
100	Al. Chlrs.	A.R.	440	514
75	Al. Chlrs.	A.N.	440	1200
60	Gen. Elec.	K.	440	1800
50	Westghse.	T.E.F.C.	440	1200
40	Gen. Elec.	K.T.	440	3600
30	Al. Chlrs.	A.N.-204	220	900
25	Al. Chlrs.	A.R.	220	1200

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NEWS OF CONCRETE MANUFACTURERS

Association Plans to Aid Rehabilitation Project By Placement Service

An outstanding phase of a rehabilitation program developed by the Los Angeles County sheriff's office is the 2800-acre Wayside Honor Rancho located near Castaic, Calif. It is the only penal institution of its type in the United States.

Newest facility on the farm for vocational training is a concrete block plant, which produces around 1000 blocks a day. These are being stockpiled as the basic building material for a long-range construction program on the farm. Concrete block will be used for most of the buildings in this program because of its fireproof and earthquake resistant qualities. Many existing buildings will be torn down and rebuilt in block.

Many prisoners have expressed a keen interest in learning the mechanics of block making, Earl A. Mitchell, senior construction foreman has reported.

The directors of the Concrete Masonry Manufacturers Association, non-profit trade association of the industry, are currently studying a plan of cooperation with the sheriff's office to provide employment in their plants for releasees who have had vocational training in the manufacture of concrete blocks at Wayside Honor Rancho.

W. P. Markert Named Director Of Promotion for N.C.M.A.

W. P. Markert

William P. Markert has been appointed director of promotion of the National Concrete Masonry Association. His duties will entail the preparation of merchandising and sales promotion material, as well as the editing of a monthly house organ.

After spending three years in the United States Army, Mr. Markert returned to graduate from Northwestern University in 1946.

Before becoming associated with National Concrete Masonry Association, Mr. Markert was engaged in sales promotion and editorial work.

Basements Are Useful Things Regretful Home-Owner Admits

A recent bulletin released by the National Concrete Masonry Association features a reprint of an article entitled *What? No Basement?* published in a popular journal last year. Available to members of N.C.M.A. at $1.25 per hundred, the reprints show cogent reasons for one rueful home-owner's plaint that he wishes he *did* have a basement.

Pointing out that the additional cost of a basement adds valuable storage area to the home at a cost of only about 50 cents per square foot of floor space, the association urges that every effort should be made to convince people that a basement is desirable and necessary, rather than a "relic of the dark ages."

Merritt Appointed Treasurer Of Universal Concrete Pipe Co.

Jack Merritt

Jack Merritt has been named treasurer of the Universal Concrete Pipe Company of Columbus, O. Formerly assistant to the president, Mr. Merritt succeeds W. E. Bishop, who resigned to enter private business.

Mr. Merritt is a veteran of three and one-half years' Army service. He was with the famed 3rd Armored Division in the European Theatre of operations. He has been with Universal for more than three years.

Civil Suit Charges Monopoly In Block Machinery Industry

Attorney General Clark recently announced the filing of a civil anti-trust suit charging that a monopoly exists in the production of machinery for turning out concrete block. The action was filed in the United States District Court at Detroit, Mich.

Defendants in the suit are the Besser Manufacturing Company, Alpena, Mich.; its president, Jesse H. Besser; the Stearns Manufacturing Company, Inc., Adrian, Mich.; and Louis Gelbman and Hamlin F. Andrus, both of Yonkers, N. Y.

Coming Events

June 27 - July 1, 1949 — Atlantic City. Fifty-second annual meeting, American Society for Testing Materials, Hotel Chalfonte-Haddon Hall.

October 24-28, 1949 — Chicago. 37th National Safety Congress and Exposition. Stevens, Congress, Morrison, Sherman, and Palmer House hotels.

Atlas Lime Company Makes Sackrete Products At El Paso and San Juan

Production of Sackrete ready-mixed concrete, packed in paper bags, has begun at the Atlas Lime Company's plant in El Paso, Tex. At San Juan, Tex., the firm is also producing Sackrete at its cinder block plant. Other products are Sand-Mix, a cement grout; Watertite, made of Portland cement and sand; and Mortar-Mix, blended of cement, sand and lime. All items are distributed throughout western Texas, New Mexico, Arizona and Chihuahua.

Sackrete products are packed in 45- and 90-lb. sacks; and the El Paso plant has a capacity of 1,000 of the 90-lb. sacks per day.

When Atlas Lime began manufacturing cinder blocks in 1946, only 11 sizes were made. That was in 1946. Now 39 different sizes and types are turned out. Material is obtained from three company-owned mountains of volcanic cinders, located near Aden, N. M.

According to President John P. Sheehan, the Atlas plants represent an investment of $500,000. The firm plans to build an additional $200,000 lime plant and office building at San Juan. Officers, in addition to Mr. Sheehan, include Harry M. Frank, vice-president in charge of production; and Milton Stovall, secretary-treasurer.

Three New Concrete Plants Opened by Missouri Concerns

Opening of the following concrete and concrete products firms in Missouri has been announced:

The Bethany Falls Transit Co. has constructed a building in Cameron for the manufacture of ready-mixed cement.

Lee R. Warren has started up business in Dexter and will manufacture all kinds of building blocks and concrete tile.

Concrete Products, Inc., is underway at Flat River and will produce ready-mixed concrete and concrete pipe.

Raymond Concrete Pile Co. Arranges Common Stock Split

Stockholders of the Raymond Concrete Pile Company of New York, N. Y., recently voted to approve an increase in the common stock by a two-for-one split of the common stock. Subsequently directors declared a quarterly dividend of 35 cents a share on the common stock, equivalent to 70 cents a share before the split; it is a 40 percent increase in the regular dividend.

Elected to fill the vacancy on the board created by the retirement of Lance G. Finlay, vice-president and director, was James Pinnell, who has been domestic construction manager.

T. L. Smith Company Builds "Biggest-Ever" Mixer To Speed Ready-Mix Output

To meet the demands of ready-mix plants and big construction projects, the T. L. Smith Company of Milwaukee has designed and built a new 6-yard tilter which is said to be the world's largest concrete mixer. Previously the largest heavy-duty mixer was a 4-yd. tilter.

The new 6-yd. mixer provides 50 percent greater output, with practically the same labor, power and general overhead costs. It will mix 6 cu. yds. per batch, in addition to its 10 percent overload guarantee. One batch fills a 4½-yd. truck mixer (6⅛-yd. agitator).

The machine has low weight, as well as low overall height and length. Features include: automatic feed chute charging, "tilt and pour" discharge without segregation, complete control of discharge, all-welded support pedestals and tilting frame, 100-hp. electric motor direct connected to transmission by a splined shaft double universal joint, and push button or manual controls.

Air-Entrained Concrete Subject of Nicholson Articles

An enlightening series of articles on air-entrained concrete, written by J. A. Nicholson, well known concrete authority and president of the Nicholson Concrete Company, Toledo, O., has been published and is being made available by the Hercules Steel Products Corporation, Galion, O., manufacturers of hydraulic hoists and dump bodies, and the new Hercules "Aircreter" air-entrained concrete dump body.

Copies of Mr. Nicholson's articles, which are particularly timely in view of the American Concrete Association's interest in air entrainment at the recent national convention, are available by writing direct to the Hercules Steel Products Corporation, Galion, O.

Laude and Schemm Appointed To New Offices at Huron

Two recent appointments have been announced by the Huron Portland Cement Company:

Clarence L. Laude has been appointed vice-president in charge of sales. He

H. R. Schemm

C. L. Laude

was formerly general sales manager.

H. Ripley Schemm, who has been assistant general manager, is now vice-president in charge of operations. The announcement of these promotions was released by Emory M. Ford, president.

I DON'T KNOW MUCH; I'M JUST A BEGINNER . . .

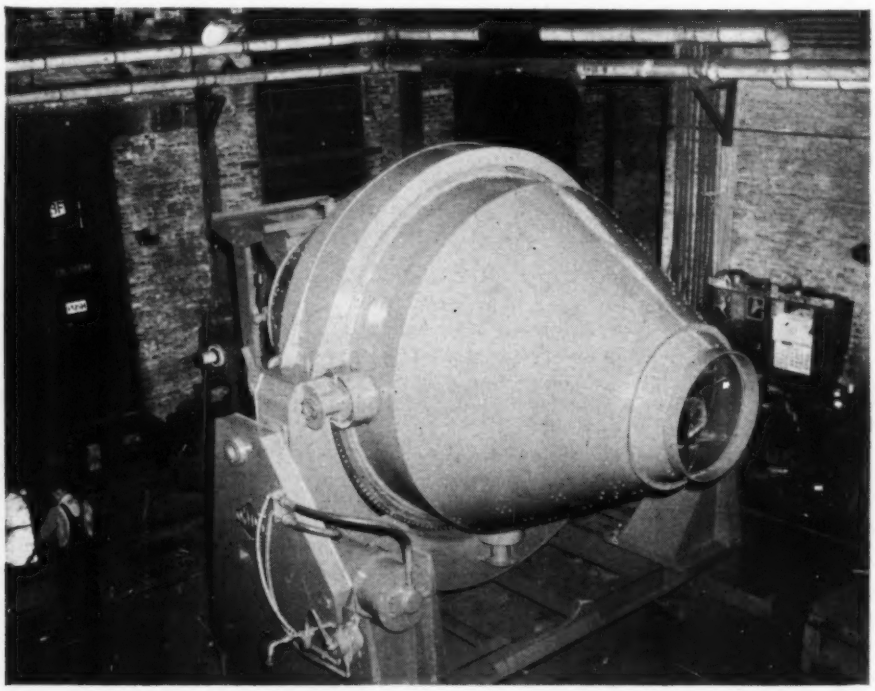
I'm always counting my pennies and trying to make more. I found that a good drain tile machine was a good way to make more pennies for profit. But—you know what? My boys like to have walked their feet off carrying the new tile and jacket 30 ft. to strip them on the floor. Then Vinz took our block racks and placed pallets on a low table by the machine. When a pallet was full, the stripper would place the pallet on the rack. This was not so good; too hard to handle, and we broke a lot of green tile handling the pallet and then moving the rack. Well, Vinz made up some racks out of wood with solid shelves and placed three of them by the machine. The stripper would fill all the racks and then move the oldest tile to the kiln, bringing back an empty from the yard and thereby leaving the greener tile to set up a bit more. We get along fine this way.

At first I took "out" all of my welding and most of my machine repairs. One day a fast-talking salesman sold me a small a.-c. electric welder of the type commonly called a "cracker box" and wound it up with a good gas outfit. You know my foreman Vinz—Well, he went to reading the book of instructions while I tried. Then I read while he tried. That was a year ago. Our "out" repair bills dropped 80%. It cost about $15.00 for materials and juice and gas to do this. The outfit cost $425 and was paid for in four months out of savings. Now Vinz has a drill press, pedestal grinder with two spindles (he made it) anvil, steel work benches, combination hand grinder and buffer, hand drill, and of lot of stuff we never thought two beginners could learn to use. Vinz has learned that he can go to the junk yard and save a lot of money on odds and ends of pipe and metal he needs from time to time. He just buys up a pile of it now and then, even if the special need doesn't exist at the time.

When my packerhead pipe machine wasn't packing the lip on the bell as it should, I didn't know what to do. Tried everything. Even wrote the manufacturer. He was too far away, and I had already paid him for the machine, so he wasn't any help. Well, my foreman Vinz dropped the skirt and trowels, down into the packer just ½ in. deeper. No more trouble! He's always doing something like that, and just a beginner, too!

Thomas F. Baker, a salesman for the Fischer Lime & Cement Company at Memphis, Tenn., died at a local hospital soon after being removed there from his office. He had suffered a heart attack.

Wigton Abbott Corporation of Plainfield, N. J., is featuring its newly-developed method of precasting concrete foundations and sills for the first time in the Continental Can Company's new plant in Pittsburgh, Pa. The units will be cast in 20-ft. sections. The plant will be of steel frame construction with concrete floors.



• This view of what is said to be the world's largest concrete mixer shows up the out-size tilter in its heroic proportions. Compare its bulk with the size of the worker in the lower left corner. No, it isn't trick photography!

Automatic Offbearer Developed by Wooley To Improve Its Products

That manufacturers of concrete block equipment do not have a monopoly on new ideas and the ability to develop them is frequently proven by the number of new or improved machines for better or more economical production of concrete masonry units which originate in the field. An automatic offbearer developed by the C. C. Wooley Concrete Block Co., Cottage Grove, Ore., is a good case in point.

At the present time this offbearing mechanism is used in conjunction with a single-unit-at-time block machine but the inventor claims that it is easily adaptable to the higher capacity multiple-unit machines. When this automatic offbearing system is used with a small hand-operated machine, no synchronization or timing is necessary; with an automatic machine a timing connection is needed.

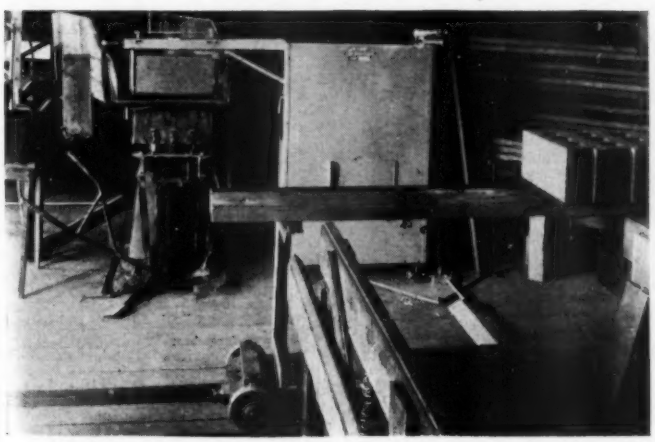
Essentially, this device consists of a rack carrier running on tracks and an offbearer which swings in a 90 deg. arc between the rack and the block machine. As the green block comes off the machine, the grapple on the offbearer is moved into a position over the block (or blocks) and automatically closes under the pallet. The weight of the block bearing down on the grapple actuates a mechanism which swings the offbearer through approximately 90 deg. to the rack carrier where the block is deposited and the grapple disengaged. The rack carrier automatically shifts sideways the width of a block (or blocks) each time a pallet is deposited on the rack. Full racks may be moved directly into the curing rooms via a manual transfer system.

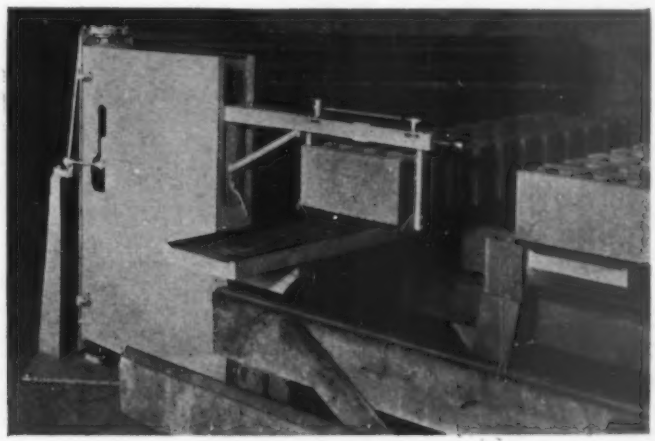
The unit will handle six cycles per minute and the grapple may be arranged to work with either a tamper- or vibration-type block machine.

With this automatic offbearer the C. C. Wooley Concrete Block Co. has been able to reduce breakage to less than one-half of one percent. Although patents have been applied for, the C. C. Wooley Co. has not marketed this device. The officials are interested, however, in contacting an equipment maker desirous of manufacturing their machine.

• Below, left: In this view the grapple has just engaged the pallet. The weight of the block in the grapple actuates a mechanism which will swing the offbearer arm around to the carrier rack (foreground).

• Right: After the block is placed in the rack, the grapple disengages and the offbearer swings back to a position beside the block machine. The carrier rack moves automatically the width of a block (or blocks) after each pallet has been deposited in the rack.





Elizabeth Copeland Joins Roy Darden Industries, Inc.

E. Copeland

Miss Elizabeth Copeland, who has been with the Besser Manufacturing Company of Atlanta, Ga., for the last three years, is now associated with Roy Darden Industries, Inc. Miss Copeland will assist Roy Darden in co-ordinating activities between the firm's home office in Atlanta and its subsidiary organizations. She will also take an active part in the F. & A. Floor and Roof System program currently being featured by the company.

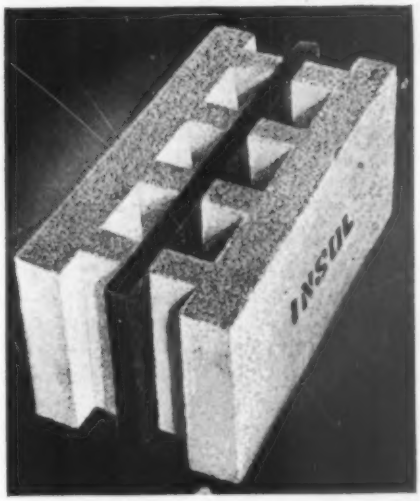
Under the direction of Miss Copeland, and with the assistance of the National Safety Council, one of the most popular systems of driver licensing in the country was established in the Georgia State Department of Public Safety.

George C. Elliott is the new sales representative for the Calaveras Cement Company in the Fresno, Calif., area. He will maintain headquarters in the Fresno Builders' Exchange. Before joining the Calaveras sales staff, Mr. Elliott was in the construction business in Fresno. He also spent two years with Fegles Construction Company, Minneapolis, Minn.

Stephen Flam, formerly active in the concrete block machine industry, has been vacationing in the Hawaiian Islands with Mrs. Flam.

New Insulated Concrete Construction Block Cuts Cost of Buildings

In recent construction-cost tests made in the St. Paul area by the Insol Company of St. Paul, housing costs were cut as much as $3,163 by using Insol "One Wall" block, which completely eliminates the need for costly stripping, according to Dr. H. R. Tregilgas, president of Insol.



• This view of a "One Wall" unit shows how insulation is incorporated in the block.

Moisture-, fire- and frost-resistant, the Insol block has an asphalt-treated insulation board which is built into the center and secured with 16-gauge galvanized steel wire. The blocks, available now in the Northwest, can be made by local plants using local materials. Franchises are to be let nationally.

Huron Portland Cement Loses Raymond A. Mooney

Raymond A. Mooney, New York state district sales manager for the Huron Portland Cement Company for the last 23 years, died in Buffalo, N. Y., on April 13. He was 60 years of age.

Prior to his association with Huron, Mr. Mooney had been identified with the building supply business for many years in the Buffalo area and throughout New York state.

Walter Acheson Elected President at 7th Wabash Valley R.M.C.A. Convention

another ON THE SPOT report

A LITTLE later in the year than usual, the Wabash Valley Ready Mixed Concrete Association held its seventh annual convention at the Stevens Hotel, Chicago, on April 21 and 22, 1949. The attendance was excellent, due largely to the many important speakers and the well-balanced program, but many believed it would have been even better if held before the heavy operating season began. The subjects covered included the selection of mixtures, merchandising, legislation, home construction, highway prospects, development of equipment, sales promotion, etc. Ample time was allowed for the discussion of these and other pertinent subjects; and this talking over of mutual problems has become an increasingly important and popular part of the program.

Much attention was also given to the lighter side of the convention. On Thursday night, April 21, there was a reception sponsored by 37 producers of cement, sand and gravel and crushed stone, and manufacturers and distributors of machinery. This was followed by the annual banquet, which provided excellent food, a humorous speaker, and musical entertainment.

Election of Officers The general business meeting of the association was held at the luncheon on Friday. The regular business was followed by the election of new officers and directors. They are: president, Walter Acheson, Somers-Barr Co., Inc., Urbana, Ill.; vice-president, J. H. Rudolph, Concrete Supply Co., Inc., Evansville, Ind.; secretary and treasurer (re-elected) Ernest Horne.

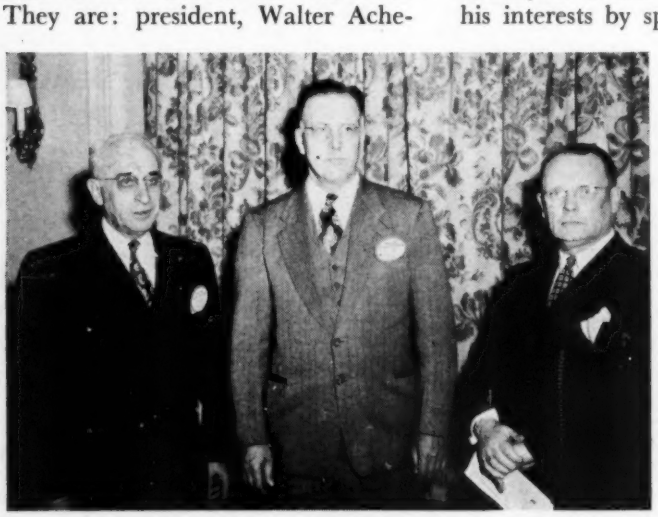
Elected directors for one year were the following: C. S. Ward, Nelsen Concrete Culvert Co., Mt. Vernon, Ill.; L. L. Shidler, Triangle Ready Mix, Kankakee, Ill.; F. N. Bundenzahl, Connersville, Ind. The new director for two years is C. C. Deal, Deal Gravel Co., Elkhart, Ind.; James F. McCracken, American Builders Supply Co., Louisville, Ky., is the new three-year director.

An indication of the growing recognition of the excellent work being done by the association was the reading of the names of seven new member companies from Indiana, Illinois and Wisconsin. There are now 69 member companies located in these three states, including a few from Kentucky and Missouri.

Walker's Comments The convention's first speaker, Stanton Walker, director of engineering, National Ready Mixed Concrete Association, chose as his subject the *Selection of Economical Mixtures to Meet Ready-Mixed Concrete Specifications.* He began with a resume of types of concrete under the following classifications: (1) prescription specification, such as those set by county requirements, etc., and offering little opportunity for application of technical knowledge; (2) semi-prescription specification, in which the buyer protects his interests by specifying the minimum of cement, maximum of water, and the suitable aggregate to be used, and in which the operator can use his technical knowledge within limits to follow the dictates of economy; and (3) design type, offering the operator complete freedom in making his proportions.

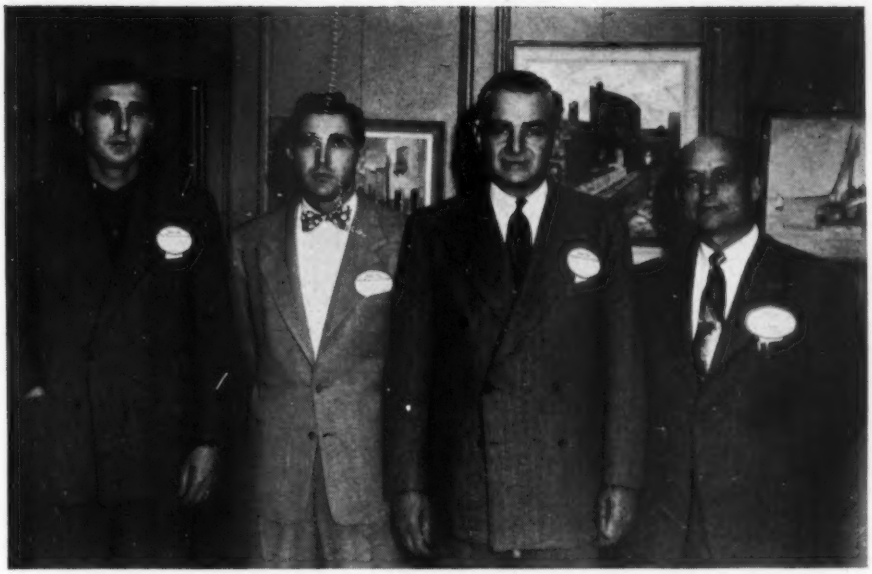
Stating that all specifications afforded, within their respective limits, latitude for operator judgment and economy in proportioning, Mr. Walker set forth as a guide a series of basic fundamentals, prefaced by an admonition that casual attention in proportioning concrete resulted in loss of yield and significant difference in cost. As a means of avoiding these conditions, he referred to the Absolute Method. While this method is excellent on paper and has been applicable in practice, the introduction of air entrainment and finer grinding of cement (which has introduced about 3 percent additional air in non-air-entrained cement) have tended to

• Stanton Walker, director of engineering, N.R.M.C.A., and C. (Dolly) Gray, former president of N.R.M.C.A.



• Ernest Horne, secretary-treasurer of the association; Walter Acheson, newly-elected president of the association; and Charles P. O'Leary, retiring president.

• T. A. Nolan, Missouri Portland Cement Co., Decatur, Ill.; James Hunter, Material & Fuel Co., Danville, Ill.; and Howard A. Coleman, Missouri Portland Cement Co., St. Louis, Mo.



• The three Shouweiler brothers, Old Fort Supply Co., Ft. Wayne, Ind.; and A. K. Downs,

invalidate its results unless the operator possesses a high knowledge of the air contained. Another method pointed out by Mr. Walker as one which is convincing to the customer, involves weight per unit of volume of concrete.

Referring to differences in concrete measured in forms and that delivered to customers, Mr. Walker attributed this, in part, to inaccuracies in the forms and said that, while shrinkage cannot be eliminated, accurate forms and extra care in measurement can reduce this to 1½ percent or less.

Mr. Walker closed his talk with a resume of research facilities which the N.R.M.C.A. maintains at the University of Maryland in cooperation with the National Sand and Gravel Assn.

Merchandising *Merchandising Ready - Mixed Concrete* was the topic discussed by R. C. Collins, general sales manager of the Warner Co., Philadelphia, Pa. He stated that the market for ready-mixed concrete is based on its uniform quality, its assurance of predetermined known cost, the fact that it permits a contractor to place or pour a larger volume of concrete in a given time and also allows winter construction to be carried on to a greater extent. Year-round operation, resulting in steady employment and consequently better quality of labor, means speedier completion of the job and lower overall construction cost. The speaker advised salesmen that ready-mixed concrete is a quality product and must be sold as such, with emphasis on this factor and not on price.

Mr. Collins also stressed the ethics of good salesmanship as an assurance of successfully meeting the challenge of the highly competitive market at hand. Breaking of prices on such products as paint, lumber, plumbing fixtures, etc., which in the past 10 years have risen 110 percent, has placed pressure on the ready-mixed concrete industry, thus presenting a serious problem, since ready-mixed prices have risen only 55 percent, leaving this industry with considerably less leeway in this respect.

Ahearn's Comments A series of related subjects on *Federal Legislation and Its Effect on American Business in 1949,* which, as events turned out, covered the entire Thursday afternoon session, were covered in detail by the N.R.M.C.A.'s capable executive secretary, Vincent P. Ahearn. First on his agenda was *Change in Wage and Hour Law,* in which he traced legislation and resulting controversy on what is considered interstate traffic in the application of the law. The administration bill for extending the scope of operations affecting interstate commerce, he pointed out, does not mean that these points are presently covered in the law, since to date they have not been legally upheld in court.

He proferred the opinion that a 75-cent minimum wage will set in motion an overall increase in wages in all industries, warning those whose scale now exceeds the minimum not to be indifferent to this possibility. He added that a minimum of 65 cents per hour appeared as a likely compromise.

In speaking of *Repeal of the Taft-Hartley Law,* which was his second subject, Mr. Ahearn inclined to the belief that President Truman's stand on this matter was a part of his campaign strategy, and that he is now faced with the necessity of promoting certain documentary changes rather than the advocation of outright appeal. He does not think that the Congress will assent in preventing the government from suppressing secondary boycotts, such as that which for years barred the entry of ready-mixed concrete into Chicago; and he likewise expects opposition to the transfer of conciliation back to the Labor Department.

Among changes which Mr. Ahearn foresaw in a new bill or a revamped Taft-Hartley Law were elimination of such clauses as the closed shop, separate union for draftsmen, the right of the employee to present grievances directly to management, prohibition of high initiation fees and political contributions, and discrimination against Communists.

Mentioning the Wood Bill, presently before the House, he said this proposal retains most of the Taft-Hartley clauses, with the elimination of the required balloting for a union shop among the most important changes.

The third and final topic in Mr. Ahearn's series was the *Basing Point Law.* He stated that the committee, set up to study the cement decision —now under the chairmanship of Senator Johnson— is doing a highly commendable job of continuing its research into the subject and seems to favor the thought that a uniform price within a price zone cannot necessarily be considered a conspiracy.

Mr. Ahearn stated that small industry believes it has received injury equal to that of large industry as a result of the basing point decision. In connection with this he mentioned the proposed Myer Bill, which provides for a two-year moratorium to allow absorption of freight prices to meet competition.

Condition of Roads Two of the speakers at one of the meetings forcefully emphasized the poor condition of the highways in Indiana and Illinois and elsewhere and declared that immediate and drastic steps must be taken to make them adequate for present-day traffic. Samuel C. Hadden, chairman of the State Highway Commission of Indiana, blamed much of the condition of the highways on the overloading of trucks

(*Continued on page* 134)

Central-Mix Plant Supplies Air-Entrained Concrete For University of Michigan Building Project

CENTRAL-mixed, air-entrained concrete has found ready acceptance in Ann Arbor, home of the University of Michigan. Introduced in the area in May, 1948, by the Killins Gravel Company, located about two miles from downtown Ann Arbor, the yardage produced doubled each month throughout the year, with the exception of December, when the seasonal slump in the building industry began to be felt.

Central-mixed concrete has been specified for the construction and maintenance of the vast array of buildings that comprise the university. The largest contract awarded to the Killins Co. was for the new University Maternity Hospital. This job, according to company officials, will require a total of more than 3,000 cu. yds. of this type of concrete.

The city of Ann Arbor also has specified central-mixed concrete for a substantial portion of municipal construction and maintenance. Other jobs include new industrial and commercial structures in Ann Arbor, Ypsilanti and surrounding towns.

Delivery of the concrete is made in a fleet of seven Ford trucks equipped with specially built 4-cu. yd. dump bodies. They have made deliveries to jobs 30 miles distant from the mixing plant. This Killins Co. officials say, is considered the maximum distance the concrete can be delivered without appreciable change in physical character or segregation of the sand, stone or cement.

• Two of the Killins Gravel Co. trucks on the job at the University of Michigan's new $1,000,000 maternity hospital.

The Killins mixing plant incorporates some of the latest developments in design and construction. Sand, stone, cement and water are fed into a 2-cu yd. mixer from overhead aggregate bins. All ingredients, including water content, are scientifically weighed to assure strict conformity with contract specifications and uniformity of texture in every batch of concrete delivered on the job. Although two batches from the 2-cu. yd. mixer are required to fill the 4-cu. yd. concrete dump bodies on the trucks, the complete operation is performed in less than five minutes.

• Four cu. yds. of central-mixed concrete are hauled away from the Killins Gravel Co. mixing plant in a specially-designed dump body truck.

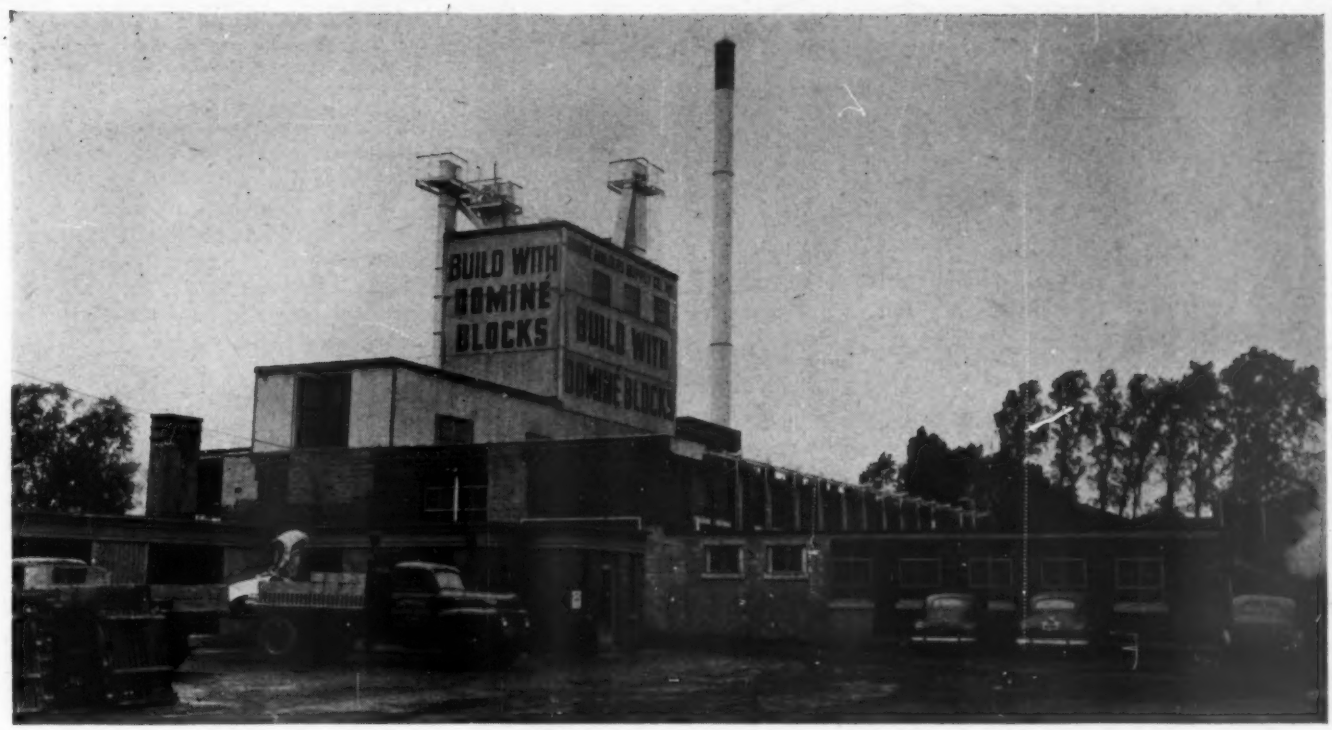
The principal function of the Killins truck fleet is to provide fast, dependable delivery to the job. However, it has been found that the specially designed concrete bodies can be used to haul sand, stone, cement and other materials to the mixing plant. From these, aggregates are dumped into a hopper and fed to a conveyor belt, instead of being hoisted by crane. Cement comes in bulk and is elevated to the cement bin by a bucket elevator. An auxiliary cement bin of 400-barrel capacity is situated at ground level outside the mixing plant.

An experienced mechanic keeps the trucks in good repair. Drivers report each night on the condition of their respective trucks, and any needed service is attended to immediately. Trucks are lubricated on regular schedule and are washed every night.

Each morning, before making its first trip, the concrete body on each truck and the truck cab are sprayed with a thin coat of paraffin oil. This coating serves a dual purpose. It keeps the concrete from sticking to the sides and bottom of the box and it prevents any concrete which may be spilled on the cab from hardening and ruining the finish.

An unusual incentive system has been devised to encourage drivers to take good care of their trucks. Instead of being paid a cash bonus, drivers who keep their vehicles in

(*Continued on page* 132)



• A general view of the modern concrete masonry unit plant of the Domine Builders Supply Co., Inc., Rochester, N. Y.

USING THE SQUEAL

Unique Motto of Domine Builders Supply Yields High Productive Rate per Man-Hour

another ON THE SPOT report

WE have long felt that one of the dominant factors in the growth of the concrete masonry unit industry has been the almost missionary zeal and enthusiasm shown by some of the men who pioneered in the business. Some

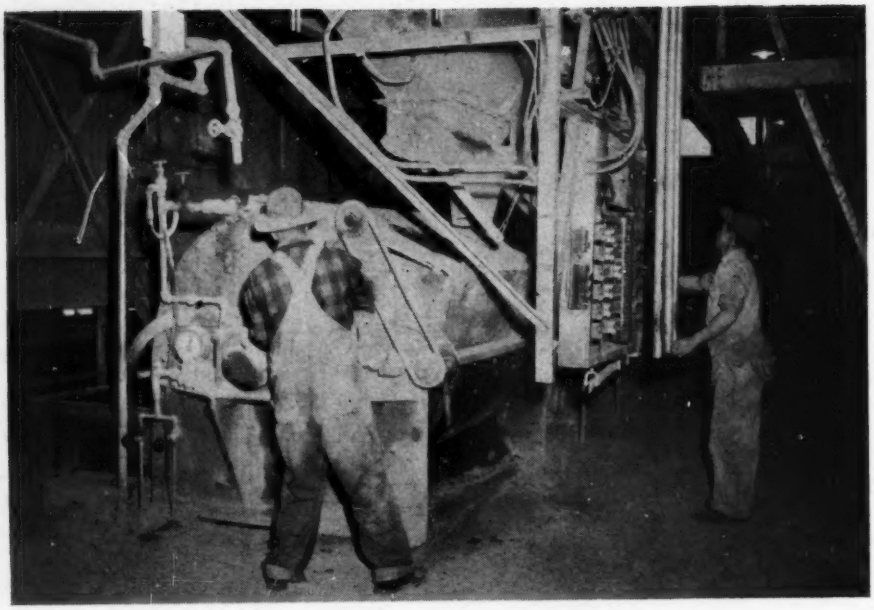
By WILLIAM M. AVERY

weeks ago we spent the better part of a day at the plant of Domine Builders Supply Co., Inc., Rochester, N. Y., where we found an abundance of evidence to support this theory.

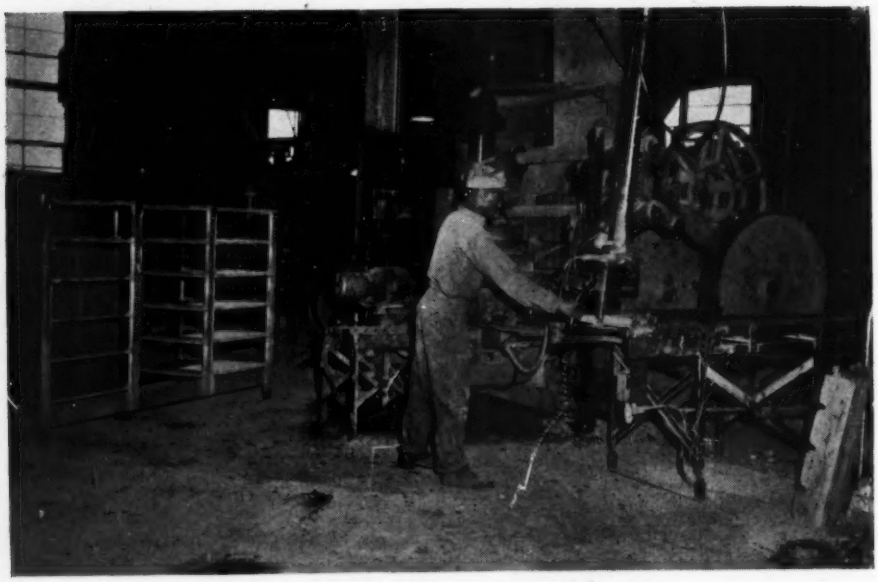
H. P. Domine, founder and president of the company, is not only an industry pioneer in the true sense of the word, but one of the most enthusiastic advocates of concrete masonry units it has been our good fortune to meet. He came to this country from Germany in 1910, and in that year established at Rochester the first concrete roofing tile plant ever operated in the States. At that time production was entirely by hand, but Mr. Domine's flair for mechanics soon resulted in the development of a practical machine for doing the job, and in 1914 he started manufacturing and selling what is believed to be the first successful automatic roofing tile machine.

In 1922 Mr. Domine went into the mason's supply business, in connection with which he began producing concrete masonry units as a side line. Last year the former

• H. P. Domine, founder and president of the company which bears his name, is one of the industry's true pioneers. He built his first plant in Rochester in 1910 to manufacture roofing tile.



• Left: A view on the batching floor of the plant, showing one of the three 50-cu. ft. mixers and the traveling weigh batcher.



• A front view of one of the machines, showing how the offbearer loads pallets onto the pallet feeder. Note that under normal operating conditions there would be another rack between the camera and the block machine.

side-line business accounted for a whopping share of the company's total volume.

In the years spanned by Mr. Domine's career the block business has changed so radically as to be almost unrecognizable. He recalls, for example, that a scant 20 years ago a production of 100 blocks per man per day was considered to be quite a good showing. In his own modern plant a crew of 13 men now produce over 19,000 units in a 9½-hr. day, or almost 1,400 units per man per day—a figure which takes into account all direct labor including cubing and stocking. Such tremendous progress must obviously be the result of the combined efforts of many men, some working independently and some in unison, but we are satisfied that Mr. Domine's role has been anything but a passive one.

As he explained it to us, part of the secret of high output per man is to keep every man at the plant working at a steady pace. When vibrating machines first appeared some years ago, it occurred to him that there was one definite merit in the unholy uproar they created: since conversation was almost impossible in the immediate vicinity of such machines, why not tune up the whole production cycle to utilize the time which formerly had been wasted in pointless talk? He calls this, we think rather aptly, using the squeal of the pig, or going the stockyards one better on their proud boast of using everything *but* the squeal.

Some progress was made toward this goal in an older plant in which the company carried on operations for a number of years, but inadequate space and faults of layout imposed definite limits on how much could be accomplished. The real opportunity came in the Fall of 1945, when ground was broken for an entirely new plant. In its layout and design Mr. Domine undertook to incorporate every bit of know-how gleaned in his long years of experience in the industry.

The new plant, housed in a 137-by 155-ft. concrete masonry building, went into production in the fall of 1946. Its basic arrangement is not radically different from other

• Looking at the rear of the machine, one sees the transverse section of the pallet feeder which loads the pallet magazine. The arrow points to the recorder mechanism which shows the actual hours of operation.

• Practically all production is handled in 4-ft. cubes containing 108 standard units. Here one of the trucks picks up a cube to load it on a truck.

• Truck beds are made 8 ft. wide and either 12 or 16 ft. long to accommodate the 4-ft cubes. With this method of handling, a 6-man crew operating 3 lift-trucks can load out over 50 flat-bed trucks in an average day.

modern, well-designed block plants which have been described in these pages. It is a 3-level design with Butler overhead bins (capacity 300 cu. yds. in 5 compartments), a 6-beam Butler traveling weigh batcher, and three Besser 50-cu. ft. batch mixers on a mezzanine floor directly above the three Besser Super Vibrapacs. The machine floor is somewhat more spacious than in many plants of similar capacity. This departure from more-or-less accepted practice was necessitated by a new concept of handling blocks; *i. e.* that all operations (except curing, but including cubing) be carried on directly in front of the block machines. This in turn is in some measure an outgrowth of another Domine development which is almost a story in itself.

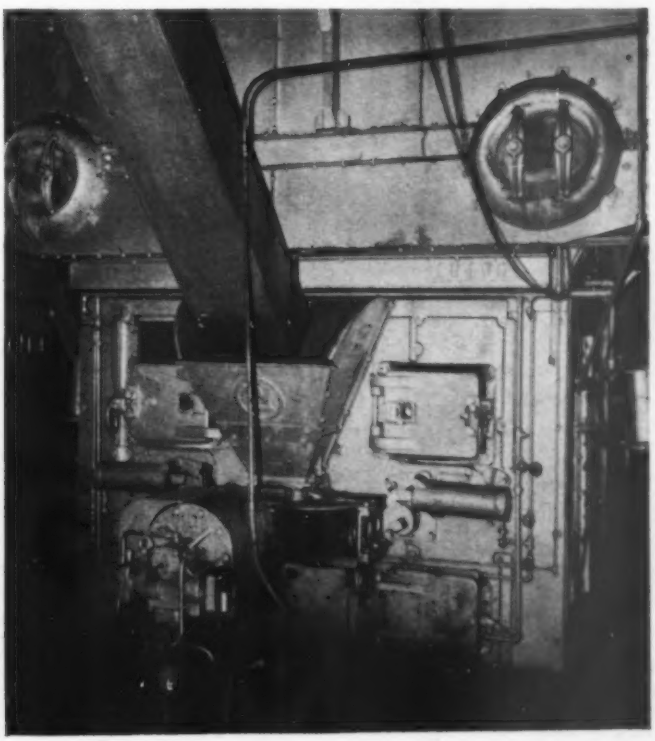
About two years ago the company started work on an automatic pallet feeder which would eliminate the arduous job of hand loading the pallet magazines at the rear of the block machines. Out of this effort there came the Domine Automatic Pallet Feeder, one unit of which has been operating successfully for more than a year at this plant in Rochester.

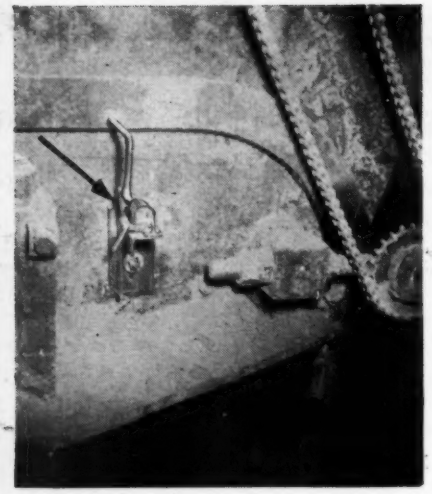
The feeder dispenses entirely with operations at the rear of the block machine. There are two racks at the front of the machine, one empty, into which pallets of green block are loaded, and the other filled with cured units from the kiln. The latter is unloaded and the units are cubed in front of the block machine, the cubers doubling up the empty pallets on the side of the rack nearest the off-bearer. The off-bearer alternately loads green block into the the empty rack and on the return trip picks up two empty pallets which he places on the rear end of the feeder. The feeder automatically conveys the pallets to the rear of the machine, where they drop on a short transverse conveyor which does the actual feeding into the magazine. The feeder is installed on the drive (or right) side of the block machine. It requires only 3½ ft. of clear space, operates with one ¼-hp. motor.

At speeds up to 200 pallets per hour it is claimed that the off-bearer can handle the pallet-feed-

• Right: a view of the 175-hp. boiler which supplies steam for curing and space heating.

• Below: The big, 36-pallet racks ars handled with lift-trucks of the type shown in this view. Three-wheel design gives great maneuverability, an especially important consideration inside the plant.





• The counter mechanism (arrow) on one of the mixers. The counter is tripped by a lever which opens the discharge gate.

ing operation with a standard single-pallet fork. At higher speeds a double-pallet off-bearer fork is recommended in order to give the operator additional time.

In addition to eliminating a pallet feeder man from the machine crew (a job which requires lifting 50 tons of steel per day) several other economies are said to result from the use of the feeder. By virtually eliminating all movement of empty racks in the plant, lift-truck operations are said to be cut almost in half. The life of the pallet feeder chain on the block machine is prolonged considerably because, with automatic feeding, only a few pallets need be carried in the magazine. The pallet feeder is now being marketed as a service to the industry by the Domine Automatic Machinery Corp. of Rochester.

Domine was one of the first companies in the industry to adopt the 36-pallet (108-unit) rack as the basis for handling the finished product in cubes measuring 4 ft. on a side. To accommodate this standardized cube all delivery truck beds are built 8 ft. wide and either 12 or 16 ft. long. Two men do the cubing in front of each block machine in the plant, or a total of six when all three machines are in operation. Thus the basic plant crew engaged in the direct labor of producing and yarding 19.000 units per day is made up as follows: 2 mixer men, 3 off-bearers, 6 cubers, and 2 lift-truck operators, or 13 men in all. The real economy of cubing, of course, shows up most clearly in truck loading operations.

Before cubing was adopted at the Domine plant, it took a crew of 4 men about an hour to load the average truck. Now one man operating a lift-truck does the same job in less than ½ hour. Of the 5 lift-trucks (three Hyster 75's and two Towmotors of 6,000- and 10,-000-lb. capacity) which the company operates, only two are needed inside the building; the other three are assigned to truck loading operations in the yard.

In addition to the three lift-truck operators assigned to loading operations, three men in the yard do miscellaneous jobs connected with load. This crew of six under a job superintendent loads 54 flat-bed trucks in an average day. Mr. Domine feels that this excellent performance would be impossible without the 36-pallet rack and the 4-ft. cube. To carry this basic handling efficiency into all phases of the company's business, all mason's supplies are stored on 4-ft. square skids which can be readily handled by the lift-trucks.

In gearing his plant up to its present high production, Mr. Domine recognized at the outset the importance of having accurate and complete records of performance. As the basis for such records, counters and recording devices have been installed on the various machines in the plant to which they are applicable. An electrical counter located on the batching floor automatically records the number of batches of cement used on each shift, and separate records are kept for each block machine by means of Durant mechanical counters mounted on each of the three mixers (see cut). Both operating and non-operating time are recorded on circular charts for each block machine. These are kept by Servis Recorders which are mounted on the web of each main drive pulley. The time clock mechanism in each recorder is wound daily, and the unit is then locked to prevent tampering. A solid red line appears on the chart only for those portions of the day during which the machine is operating.

With such day-to-day performance records the company has found it not too difficult to run down the cause of production delays. Written reports are made each day on any delay time shown on the Servis charts, and these reports are studied and analyzed at regular intervals with a view to improved efficiency.

Each of 7 kilns in the plant holds 28 36-pallet racks, giving a total simultaneous curing capacity of over 21,000 units. All steam for curing and space heating is provided by a 175-hp. Wicks boiler. As soon as each kiln is filled, it is closed and a 180-deg. water fog is introduced through Monarch fog nozzles to prevent loss of water during the approximately 2-hr. period required for the initial set.

In the next stage of the curing cycle live steam is introduced until the temperature inside the kiln reaches 180 deg. F. This normally takes about 2½ hours. At this point the steam is cut off entirely and the units are allowed to soak until morning, when the kilns are exhausted by means of fans in preparation for unloading. In the present curing cycle no specific provision is made for drying. Having adequate yard space, the company prefers to store all production for at least a week before shipping.

In Domine's current operations gravel units account for about two-thirds of production, lightweight cinder units for the remainder. Railroad and industrial cinders are shipped to the plant in hopper-bottom cars and are belt conveyed into the processing area from an under-track hopper. A Dings magnetic pulley on the head shaft of the belt conveyor removes any tramp iron which might be present in the cinders. Crushing and screening are done in a closed-circuit arrangement of a New Holland roll crusher and a 3-by 10-ft. 2-deck Seco vibrating screen.

Although Mr. Domine would seem to have done quite a good job of "using the squeal" in his plant operations, he is by no means satisfied that an ultimate has been achieved in any phase of its production process. In common with most of the block industry's leading producers, Mr. Domine feels that the future of the product is inseparably linked with this never-ending search for productive techniques which will produce better block at lower costs. In Mr. Domine's case the search is both a business and a completely absorbing hobby — a combination which seems virtually unbeatable in any field of endeavor.

Central-Mix Plant

(*From page* 128)

the best condition are permitted to work more hours, and thus make more money. The system works to the satisfaction of all concerned, since an extra five or six hours runs into a tidy sum and the management benefits by accomplishing more work during the busy season.

Ray C. Killins is president; Louis E. Burke, vice-president; and David A. Killins, secretary-treasurer.

Dust Collection in Ready-Mixed Concrete Plants

By D. C. HAY
President Kuert Concrete, Inc.

ANY operation which involves the handling of dry cement is, by its very nature, a dust-creating operation; and the weighing and batching operations in the ready-mix concrete plant are no exception to this rule. By the use of careful hooding and adequate ventilation, however, the nuisance factor can be eliminated and the loss of cement in the form of dust can be prevented.

An example of how such a clean-up can be effected is provided by the new plant of Kuert Concrete, Inc., in South Bend, Ind. This is a Model 162 plant built by the C. S. Johnson Co., of Champaign, Ill., and equipped with two 2-cu. yd. Smith mixers. It has a rated capacity of 120 cu. yds. of concrete per hour. During the first few months of operation the dust situation proved to be a considerable nuisance, and it was decided to install some sort of ventilating and dust collecting system in the plant. The collector installed was a cloth-bag, filter-type collector manufactured by American Wheelabrator & Equipment Corp., Mishawaka, Ind.

The collector unit itself is enclosed in a fabricated steel cabinet 6½ ft. long, 4 ft. wide and approximately 10 ft. high. Space limitations imposed by the ceiling height necessitated setting the collector on foundation pads on the floor with the hoppers extending through the floor. This is apparent in Fig. 5. Dust-laden air, at the rate of 1900 cu. ft. per minute is filtered through the 540 sq. ft. of filter cloth.

Careful hooding at each dust source held the air requirements to the minimum and permitted the use of a somewhat smaller collector than would normally be required. This was of considerable importance in view of the limited space available in the plant, and the reduced air volume means less cement carried out of the system.

Figures 2 and 3 illustrate the arrangement for ventilating the batcher and show the special hood that was installed. Panel A in Fig. 3 is held in place by a simple locking device and can be easily removed to provide access into the interior of the hopper for cleaning. This should be done every day to prevent a build up of cement on the walls of the hopper.

The two plates in the step on either side of the duct (B in Fig. 3) cover access holes. Through these, the operator can punch down any frozen aggregate or stone that may hang up in the hopper chute.

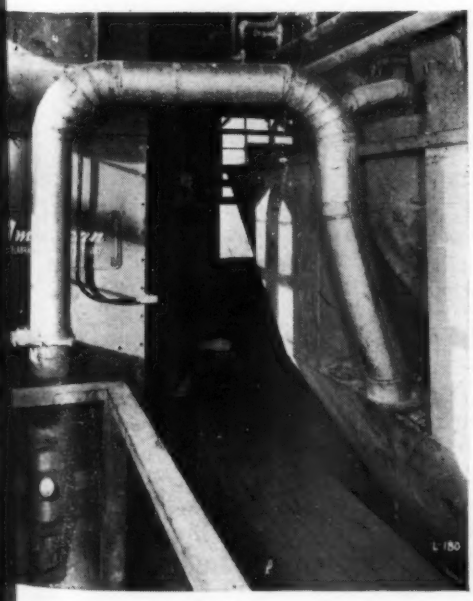
As shown in Fig. 2, the cement weighing hopper vent is tapped into this same duct. As the cement is charged to the hopper the displaced air escapes through this vent and is carried, with the other dust-laden air, to the collector. In order to keep the walking area open, the duct work was looped overhead as shown.

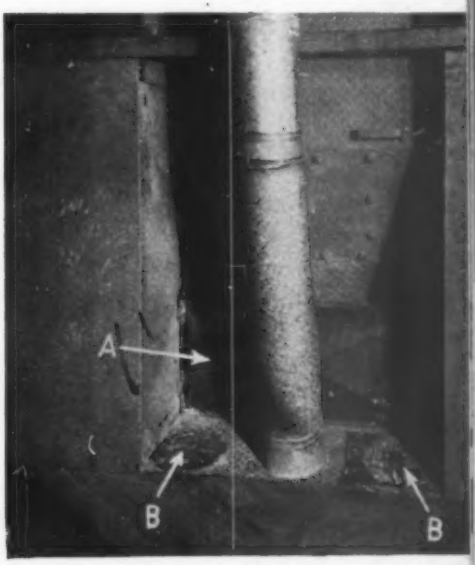
Fig. 4 illustrates the hooding arrangement used on the exhaust vents at the ends of the mixers. Because of the fact that the mixers must tilt to discharge each batch, no rigid connection could be made between them and the duct work.

The arrangement shown provides adequate ventilation, with air being drawn into the hood through the small area separating the mixer and the hood as well as through the mixer itself. This acts as an effective dust seal and prevents dust from escaping through this aperture. A hinged door at the bottom of the hood permits ready removal of any cement which settles out in the duct and allows easy cleaning of the hood.

Fig. 1. The ready-mixed concrete plant of Kuert Concrete, Inc., at South Bend, Ind.

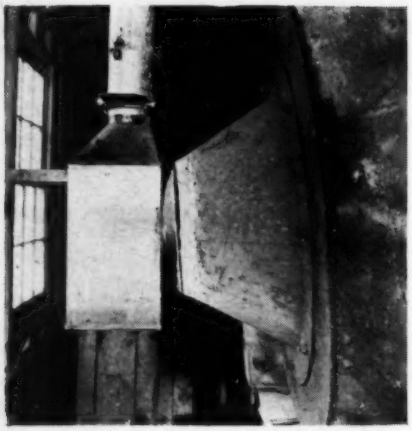
The dust collector itself consists of a series of long cloth bags—5 in. in diameter and 7 ft. 6 inches long—suspended from an overhead shaker channel and held in place at the bottom by spring steel bands in a special cell plate arrangement. The dust-laden air enters through the one inlet shown in the lower left hand corner of Fig. 2 and enters an expansion chamber under the cloth bags. Here the velocity of the air decreases to a point where some of the heavier particles will





Left: Fig. 2. The dust collector and the duct from the batcher at the right. The cement weighing hopper, top right, is tapped into the same duct.

Right: Fig. 3. The special hood installed on the batcher with ventilating duct, removable panel (A), and plates over access holes (B).



Left: Fig. 4. The hooding arrangement used on the exhaust vents at the ends of the tilting mixers.

Right: Fig. 5. Space limitations made it necessary to set the collector on foundation pads on the floor, with the hoppers extending through the floor as shown.

settle out and the rest float upward to be trapped in the bags, while the clean air is recirculated in the room.

The fans are shut off and the units shaken down periodically. During the shaking cycle the accumulated dust shaken from the tubes collects in the hopper below and feeds by gravity back to the cement elevator.

Fig. 5 shows the piping from the dust collector hopper as it passes through the outside wall of the building to the elevator. Special relays incorporated in the electrical systems insure automatic shaking of the bags whenever the collector is shut off. In this way there is no chance of appreciable quantities of cement being left in the bags over week-ends when conditions might arise which would cause the cement to "set-up" in the bags.

Because the material collected is fed directly back to the cement elevator, it has not been possible to keep an accurate record of the amount of material saved by the ventilation system. However, during the first week or two of operation the return spout to the elevator was not hooked up and the cement shaken down at the end of each day was collected in bags and weighed. This was during the winter months. The best daily production during that period was 418 cu. yds. in one day. The amount of cement recovered from the collector for that day's operation was approximately three sacks; so it can be roughly estimated that, at capacity operation, the collector will recover between six or seven sacks of cement per day.

The primary advantage, though, has been the greatly improved working conditions in the plant. This makes itself felt in improved employee relations, more efficient and accurate operation and in the impression it creates on prospective customers who visit the plant.

Wabash Valley R. M. Assn.

(*From page* 127)

during and since the war.

C. M. Hathaway, chief engineer of the Illinois State Highway Department, said that most of the existing roads were not designed for present conditions. New and better roads must be built and the old ones salvaged wherever possible. Mr. Hathaway pointed out that the potential market for ready-mixed concrete in highways is not in new pavement, but for widening, patching, curbs and gutters, culverts, small bridges, etc. To obtain a worthwhile volume of such business, he said, producers must be willing to haul at least 15 or 20 miles.

Engineers of the same department told of a survey made of ready-mixed concrete plants in Illinois to ascertain the availability of suitable concrete for such work. Out of 88 plants, he said, 75 percent could furnish aggregates in two sizes, 33 1/3 percent could supply air-entrained concrete, and only six percent had air meters to ascertain the air content of the concrete sold.

Concrete School *A Report on Concrete School at Indianapolis* was presented by Prof. A. E. Huchins, Rose Polytechnic Institute. The subject of the recent session was a rapid method for the estimation of surface water in sand and gravel. The "squeeze" test as applied to various sands in Indiana was taught because it could be used quickly and with reasonable accuracy by anyone, regardless of educational background. The average plant operator, he said, was able to determine the water content of sand within ½ of 1 percent after taking the course.

In closing, Prof. Huchins said that it was becoming difficult to find more subjects to teach operators. He suggested that the next school be for owners, and that a wide variety of subjects be taught. The members present voted to continue the school with subjects to be chosen later.

Equipment Trends A. E. Miller, manager of the Paving Department, Construction Machinery Division, Chain Belt Co., spoke on *The Development and Trend of Equipment for the Ready Mixed Concrete Industry.* He went back over the 30-year history of this industry which, he said, is still comparatively unknown to the general public. The industry began in 1916, almost simultaneously in Baltimore, Philadelphia and Fort Worth. For 10 years little progress was made, due chiefly to poor delivery equipment which permitted segregation. When drum-type mixers and agitators became available, he said, the industry began to grow rapidly. Later air entrainment also helped it along. Now, said Mr. Miller, it is a 250-million-dollar business; but it still uses only 15 percent of the cement produced, and there is no limit to the possibilities for future growth.

Sales Promotion W. Wayne Wallace, district engineer of the Portland Cement Assn., emphasized the importance of an intelligent long-range promotional plan for the industry as a buyers' market in concrete is near, perhaps by early in 1950.

Semi-Automatic Tile Machine Built By California Concern

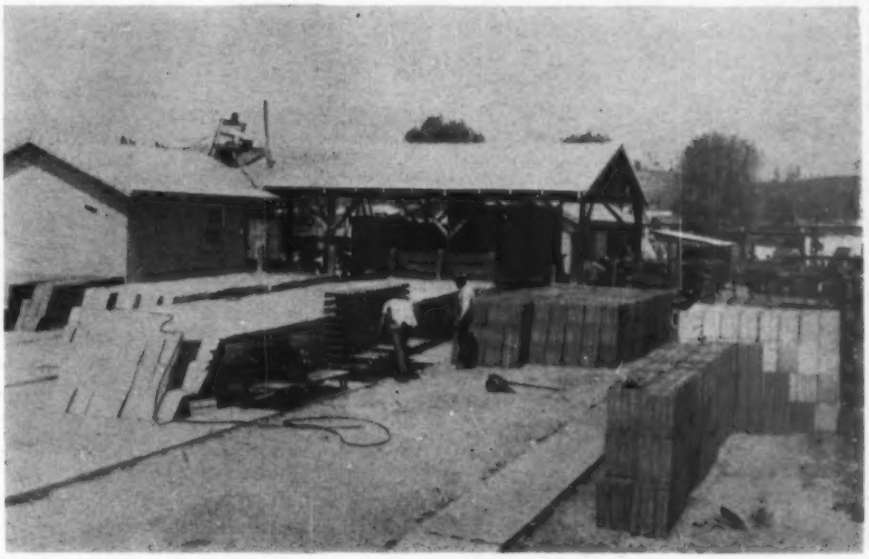
By HARRY F. UTLEY

another ON THE SPOT report

DEVELOPMENT of a semi-automatic machine for the manufacture of concrete roofing tile has just been announced by the Perma-Tile Concrete Products Co., 2201 Arrowhead Ave., San Bernardino, Calif.

The concern, a pioneer in this field, has been producing roof tiles on hand machines for many years. It required painstaking training of operators, however, before they could achieve the speed and perfection necessary to turn out high-grade units.

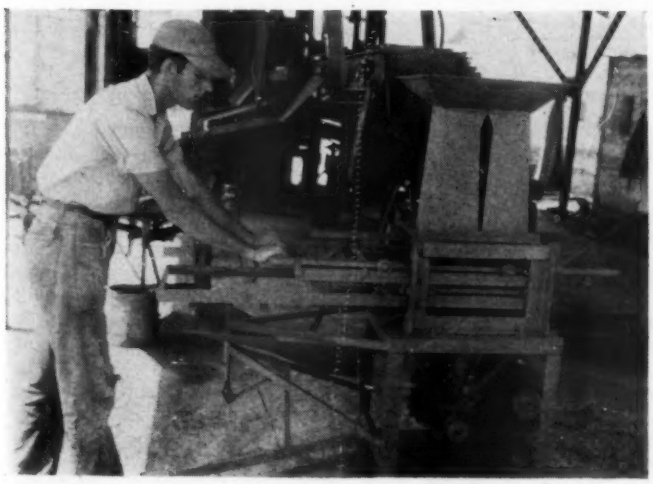
The new machine, developed by Frank J. Hart, head of the concern, is the culmination of several years of engineering effort and is now being made available generally to the concrete products industries. The ability to make perfect roofing tiles is built into the machine itself and is in no way dependent upon operator skill. Concrete is fed continuously and uniformly by a pant-leg hopper over the mold-and-pallet carriage. A motor-driven vibrator thoroughly compacts the concrete to maximum density in a few seconds, and the cut-off knife carriage is moved forward, forming the top of the unit and acting as a gate to stop the flow of concrete. The completed unit is then withdrawn, being troweled automatically at the same time and given a finish "slick" by a fog-spray of water.



• A general view of the plant and the roofing-tile storage yard of the Perma-Tile Concrete Products Company, San Bernardino, Calif.

The entire cycle requires but 12 or 14 seconds, production per machine being at the rate of about 1800 tiles per day.

At the Perma-Tile plant in San Bernardino the machine hoppers are supplied with concrete by a slow-moving belt running from the



• Right, above: The operator lays the pallet on the carriage of the new semi-automatic machine.
• Left below: The upper carriage cuts off the flow of concrete and forms the tile.
• Right: The lower carriage pulls out the tile, troweling it at the same time. Here the operator is removing the tile from the machine.

• Left: Two types of interlocking units are made on the machine—Mission or Spanish (at top of rack), and flat, streamlined (at bottom).

• Right: The new Perma-Tile machine, developed by Frank J. Hart, head of the concern.

mixer. Modern streamlined and half-round Mission style tile, both interlocking, are produced on the machine. Curing is done in steam rooms, and is followed by a period of yard seasoning. The Perma-Tile roofing is produced in a variety of colors to suit any architectural whim. While the interlocking feature enables them to be laid up rapidly without the use of nails, a storm-proof installation and snug fit on the roof is assured by the use of lifetime spring-steel clips which anchor each unit permanently to the shingle strips.

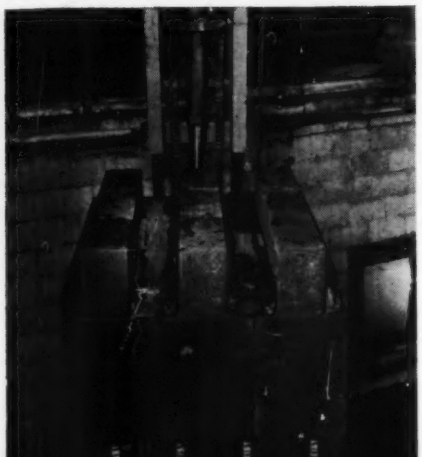
The troweling action by which the tiles are finished as they are drawn from the machine gives them a smooth, waterproof surface. This eliminates any need for glazing or other waterproofing treatment later. Color is inherent in the units themselves, fadeproof mineral oxides being added when the concrete is mixed.

According to Mr. Hart, also a building contractor who has roofed hundreds of California structures with Perma-Tile, these permanent, colorful roofs can be installed at costs which are competitive with wooden or composition roofing, yet their manufacture has proved to be a highly-profitable one for the concrete-products plant.

NEW MACHINERY and SUPPLIES

• Air-Expanding Forks

No pallets or "base" layers are needed to handle blocks or bricks when the Service "Motowlift," equipped with air-expanding forks, goes to work, states the manufacturer, Service Caster & Truck Corp., Albion, Mich. This new development in fork lift-trucks was recently demonstrated at the Concrete Industries Exposition at the Public Auditorium, Cleveland, O.



The exclusive Service air-expanding forks handle heavy cubed loads gently, lessening breakage and chipping. According to company tests, an operator can easily load a truck with four cubes of blocks in five minutes—a large trailer with 12 or 14 cubes in 20 to 25 minutes.

The Service side-shifter moves the load laterally, enabling the operator to spot a cube tight against the others without jockeying.

Motowlift, with a capacity of 4000 lbs. on a 24-in. load center, is Ford-powered, and it features the Unilever Control.

• Rust Inhibitive Solution

An almost clear solution composed of repellents, a rust inhibitive, a blocking agent and light volatile oils is offered by the Spray-O-Bond Company, 2225 N. Humboldt Ave., Milwaukee 12, Wis. The water repellent, blocking agent and rust inhibitor are polar compounds, so that one end of the molecule carries an electrical charge, causing it to affix itself to metallic surfaces instead of coating it as is true of oil films.

The manufacturer states that tests showed that steel plates treated with Spray-O-Bond resisted corrosion and rusting after 200 hours' exposure to 100 percent humidity and 100-deg. F. temperature conditions. The solution is applied by dipping, spraying or brushing steel pallets, racks, metal or wood forms, machinery and equipment. According to the manufacturer, it will prolong the life of metallic objects subject to high humidity and moisture conditions and provide easier stripping of pallets and metal forms.

It was designed to provide a repellent, penetrating-type of solution which holds to the surface due to its polar compounds, even though moisture is present.

A. TEICHERT & SON,
ESTABLISHED 1878
ENGINEERING CONTRACTORS

1846-27TH STREET
MAIL ADDRESS P. O. BOX 1113
Sacramento 5, California
January 12, 1949

Mr. C. H. Grant,
President,
C. H. Grant Company,
435 Bryant Street,
San Francisco 7, California.

Dear Mr. Grant:

Regarding the Blaw-Knox 4½-yard Truck Mixers, we are getting very good performance from them.

They are easy to keep clean and will be free from tailgate trouble, which are the major maintenance problems with other mixers.

We find that they load faster and will discharge low slump concrete faster than any of the other mixers that we own.

Sincerely,
A. TEICHERT & SON, INC.
By C. A. Williamson
C. A. Williamson
Superintendent

CAW:ar

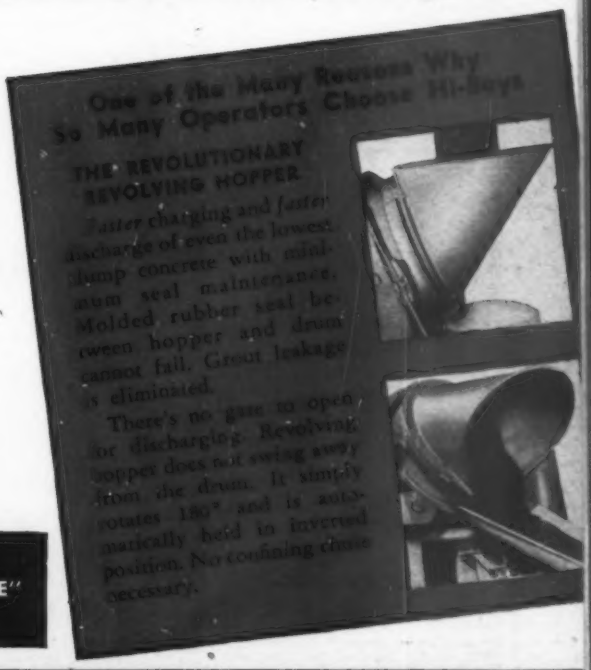
"THEY LOAD FASTER AND DISCHARGE LOW SLUMP CONCRETE FASTER THAN ANY OTHER MIXER"

Says **C. A. WILLIAMSON**
A. TEICHERT & SON, INC.
Sacramento, Cal.

THAT'S WHAT THEY ALL SAY ABOUT

BLAW-KNOX *Hi-Boy* TRUKMIXERS

READY-MIX OPERATORS all over the country keep telling us "We like Hi-Boy Trukmixers"! And to prove their preference for the unit that speeds production and slashes costs, *more and more* operators are buying Hi-Boys. They like the revolutionary new Revolving Hopper that permits faster charging, faster discharge, with minimum seal maintenance. They like the thorough, uniform mix, the wide, spiral blade arrangement that discharges *all* the concrete in the drum without segregation and the consistently low maintenance. Above all, they like the trouble-free, high yardage production, shift after shift, day after day! For complete details about *all* the profit-producing features, write for Bulletin 2223.


One of the Many Reasons Why So Many Operators Choose Hi-Boys
THE REVOLUTIONARY REVOLVING HOPPER
Faster charging and faster discharge of even the lowest slump concrete with minimum seal maintenance. Molded rubber seal between hopper and drum cannot fail. Grout leakage is eliminated.
There's no gate to open for discharging. Revolving hopper does not swing away from the drum. It simply rotates 180° and is automatically held in inverted position. No confining chute necessary.

CLAMSHELL BUCKETS

PORTABLE AGGREGATE BATCHING PLANTS

Ask for Information about the
BLAW-KNOX "ALL-IN-ONE-PACKAGE" READY MIX PLANT

PORTABLE BULK CEMENT PLANTS

TRUCK MIXER LOADING PLANTS

BLAW-KNOX

BLAW-KNOX DIVISION of Blaw-Knox Company
Farmers Bank Bldg., Pittsburgh 22, Pa.
Birmingham • Chicago • New York • Philadelphia • Washington

HELTZEL
Heltzel
BUILDS IT BETTER
ASK FOR CATALOG
BULK CEMENT—C36; PORTABLE AGGREGATE PLANTS—C34; 100-400 TON PLANTS—J37; DUAL BATCHERS—J40 and J44.
HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO · U. S. A.

● Gas Fork Trucks

Smartly flowing lines and a number of chassis improvements feature the redesigned Clark "Trucloader," fork-lift truck of 1000-lb. capacity, according to a bulletin issued recently by J. H. W. Conklin, sales manager, Industrial Truck Division of Clark Equipment Company, Battle Creek, Mich.

In outward appearance the new Trucloader follows the trim, flowing lines effectively used in the design of Clark's new "Carloader" model. The truck's gas tank is now attached to the rear of the frame and is partially enclosed by the counterweight, which has been redesigned to more rounded contour, and additional weight provides added stability.

The steering column has been moved forward to provide more leg room; and lift and tilt levers have been relocated in the same positions as on other Clark models. Floor plates can be easily removed and replaced; and hinged louvers on either side of the engine compartment make for improved accessibility.

● Optional Single-Dual Tires

Erickson Power Lift Trucks, Inc., Minneapolis, Minn., has made it easy for users of Erickson lift trucks to switch from single to dual wheels. The change, according to the manufacturer, may be made with less trouble than is experienced in changing a tire on a passenger car. The wheels are simply driven onto boards and duals are mounted on a special lug in a few minutes.

With this arrangement the extra tires can be saved from wear by removing them when dual tires are not necessary. The special lugs and rims may be secured from Erickson Power Lift Trucks, Inc., 1401 N. E. Marshall Street, Minneapolis 13, Minn.

● Large-Size Cylinder Mold

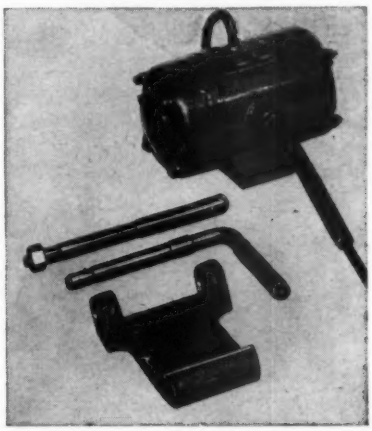
Moline Iron Works, Moline, Ill., manufacturers of concrete test cylinder molds, have announced that the plant is now producing molds in a larger size. This new product is suitable for making a concrete specimen for the laboratory which is 8 in. in diameter by 16 in. overall length.

The new size was developed in response to the need for a larger mold in heavy industries and related fields.

● External Vibrators

"Topdog" vibrators, products of the Vibro-Plus Corporation, 243 W. 55th Street, New York 19, N. Y., are offered to two types, ER160 and ER300.

Each vibrator is a completely enclosed, self-contained unit provided with a built-in, 3-phase motor and eccentrics. A



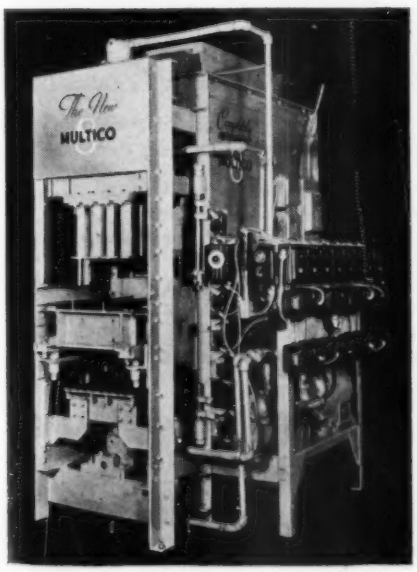
fastening bolt or a locking lever and a steel bracket is furnished; extra brackets can be supplied upon request. The standard vibrator is fitted with a 10-ft. flexible motor cable and a plug enclosed in an aluminium alloy casing. A cable coupler socket is also included, unless otherwise specified.

The working frequency of the vibrators is 3,600 impulses per minute, corresponding to 60 cycles per second (synchronous speed not considering the slip). The device operates on 60 c.p.s. 3-phase a. c. Two models are supplied from stock, viz., Model L, rated at 10 v. and Model H, rated at 220 v.

If vibrations of lower amplitude than those generated by standard vibrators are required in any individual case, the standard eccentrics can be replaced by eccentrics of smaller size.

● Automatic Block Machine

Completely automatic operation is offered by the Multiplex Machinery Corporation's new "Multico" concrete block machine, which has hydraulic power



for strike-off, pallet feeding and the block pressing mechanism. The Multico 12 produces three units simultaneously—up to 5760 per 8-hr. day; and the Multico 8 (illustrated) turns out two at a time—up to 3840 per 8-hr. day.

Any aggregate can be used with this machine; and plain or cored pallets are fed automatically. When a single-cycle operation is wished, the operator reverses the switch. The Multiplex Machinery Corp., Box 53 B, Elmore, O.

● Self-Unloading Bulk Transport

A new self-unloading transport body for cement and similar materials has been developed by the Baughman Mfg. Co., Jerseyville, Ill. The material is unloaded with double 9-in. screws discharging at the rear in single (or double) outlets equipped with water-tight rubberized cloth boots. The screws turn at approximately 50 r.p.m., but the speed may be varied by a finger-tip motor speed control. It is driven with a 4-cylinder Wisconsin motor through chain-and-sprocket drives.

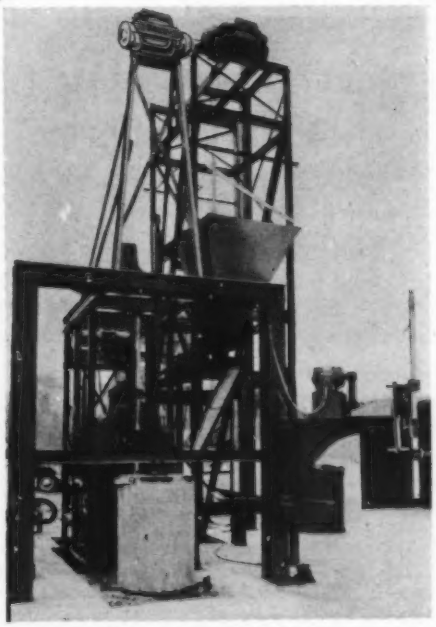
The motor is mounted on the trailer frame under the center of the body. All controls are mounted on the outside of the frame for easy accessibility.

The Hi-Speed is built of 13-gauge high-tensile alloy steel and the sills of 11-gauge high-tensile steel. The roof is made of 16- to 20-gauge checkered steel. Manholes, 18 by 24 in., are placed approximately every 7 ft. These have hinged, waterproof tops. Manholes in the rear allow easy removal of screws.

The body is welded on the chassis by spring angle suspension. The capacity (without sideboards) is 24 cu. ft. per lineal foot of body. These bodies can be built to any desired height. Length —15 to 33 ft.

CONTINENTAL MODEL T.I.C. 60

for ECONOMICAL PRODUCTION



High Efficiency

CONCRETE PIPE MACHINE

featuring

- Quality product meeting A.S.T.M. specifications
- Rugged construction
- Power driven tampers
- Easy take-off of pipe
- Makes pipe sizes 6" through 60"

There's a profitable market in your locality for high quality concrete pipe moulded in a CONTINENTAL 60 Pipe Machine.

This is a high-output unit, finely engineered and durably built for continuous, low-cost operation.

CONTINENTAL provides a complete line of accessories and cast equipment for making concrete pipe.

MAIL COUPON TODAY for descriptive literature and prices

CONTINENTAL CONCRETE PIPE & EQUIPMENT CO.
1039 W. Goodale St., P. O. Box 1494, Columbus 16, Ohio

NAME .....
COMPANY .....
ADDRESS .....
CITY .....
STATE .....

AT LAST... A Truly Dependable Concrete Roof Tile Machine!

The new Perma-Tile semi-automatic vibrator machine, representing 10 years of development and engineering, possesses these exclusive advantages:

- Smooth finish troweled in by the Perma-Tile machine automatically . . . no skilled operator is required.
- Every tile a perfect tile ... strong, lightweight, durable.
- Makes either the popular streamlined, or the half-round Mission style roofing tile.
- Easy for anyone to make 240 perfect interlocking tile hourly . . . simple to apply with the lifetime PermaClip . . . distinctive beauty sells on sight.

New PERMA-TILE Vibrator-powered Roofing-Tile Machine . . . semi-automatic action permits anyone to make 4 perfect tile per minute . . . no training or skill required.

- Perma-Tile Machines cost little more than so-called "machines" that require a highly skilled operator to produce an acceptable product.

Perma-Tile Machines are ruggedly built, foolproof, dependable. Pound-for-pound, concrete in the form of Perma-Tile is the most profitable concrete product you can produce. Write or wire for all the facts . . . TODAY!

PERMA-TILE CONCRETE PRODUCTS CO.
2201 Arrowhead Ave. San Bernardino, Calif.

SPEED PRODUCTION — DECREASE INJURIES

Tough, long wearing HORSE HIDE

Designed especially for handling block brick, tile and similar materials, these G-S Hand-Mits offer maximum wear and cool comfort at minimum cost. Workers like them. You will like the long wearing qualities of genuine horse hide.

Sample pair — $1.00 — Dozen pairs — $11.40.
Open accounts invited

ORDER TODAY DIRECT FROM

A DEPENDABLE GUIDE TO SAFETY
GENERAL SCIENTIFIC EQUIPMENT COMPANY
TESTED INDUSTRIAL SAFETY PRODUCTS

2735 W Huntingtn St., Philadelphia 32, Pa.

Ask about our complete line of leather, canvas and rubber coated gloves.

● Hydraulic-Lift Truck

The Philadelphia Division of The Yale & Towne Manufacturing Company announces a new line of electric trucks with exclusive two-stage hydraulic lifting by means of the ram-within-a-ram principle.

Called the "Lift-King" electric line, the new trucks are companion models to the gasoline-powered equipment also now being introduced by Yale. They will likewise supplement the existing sprocket-and-roller-chain designs.

In the first available series of Lift King electric trucks a "free-lift" of 66 in. (i.e. the load lift before the telescopic mechanism begins to extend) permits the truck to tier goods inside freight cars and street trucks, and in low headroom spaces. This model can reach 130 in. from the floor, can carry up to 6,000 pounds, and has an overall collapsed height of only 83 in. A second series has an overall collapsed height of barely 68 in., a free lift of 51 in. and a total reach of 100 in.

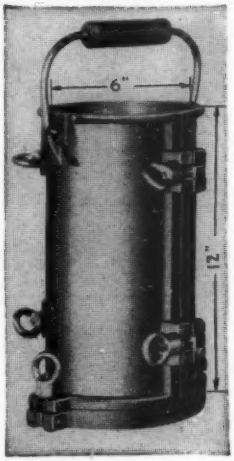
The patented Duplex lifting device employs a hydraulic piston system on a single axis which first thrusts upward to accomplish the free lift, and then thrusts downward to "raise itself by its bootstraps" and extend the telescopic mast for the second stage of lifting. The hydraulic hose connections are stationary, so that the hose need not dangle from elevated members even at extreme extension.

● Masonry Saw

The new "Eveready Briksaw" now available is said to have unusual features for fast, low-cost masonry cutting. In addition to both wet and dry cutting, portability, streamlined design and rugged construction, Briksaw reduces the operator's first cost by enabling him to buy the saw originally equipped for standard dry cutting. Later he can install an inexpensive wet cutting kit in a few minutes with a screwdriver and pliers for complete dustless operation. The pump used for wet cutting can not be damaged by operating it for dry cutting; there is no need to unhook the Eveready pump when cutting dry.

In a few seconds the cutting head

MOLINE CONCRETE TEST CYLINDER MOLD



For concrete samples of exact measurement. Made of refined malleable iron, accurately machined, with bronze wing nuts and swing bolts.

MOLINE IRON WORKS
MOLINE, ILLINOIS, U.S.A.
Over Seventy Years of Service

height can be adjusted with the patented "Adjusta-Height" feature for such widely different size materials as quarry tile, brick, partition tile, or concrete block.

Another exclusive feature is the patented "Toe-Matic" control by which the operator with a light upward tilt of the foot-treadle re-sets the cutting head at

any desired angle—then presses down to cut. "Toe-Matic" control, together with "Adjusta-Height," lets the operator slice any kind of cut in any kind or size masonry material with speed and economy. The one-piece cutting head can be removed completely in 21 seconds from the saw frame without tools.

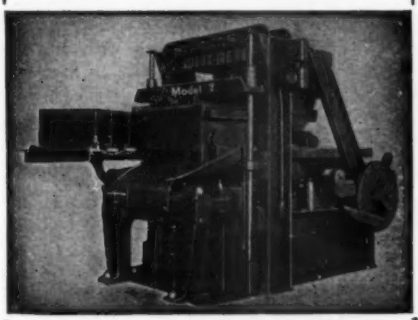
An automatic blade pressure spring (patented) automatically adjusts the blade pressure to the hardness or softness of the material.

A complete line of Eveready Briksaw blades is available in dry abrasive, wet abrasive, and diamond blades. A notarized statement that every Eveready Briksaw blade has passed speed and balance tests in excess of 50 percent above normal operating speeds, must be certified before it can be packed. The Eveready Bricksaw Co., 1509 S. Michigan Ave., Chicago, Ill.

An informative industrial sound-movie is now being released for showing at groups and meetings by the Towmotor Corporation of Cleveland, O. *The One-Man Gang* is a 30-minute picture composed of shots taken at a number of manufacturing plants to show the exact methods employed to make startling reductions in the costs of materials handling.

Methods for overcoming production bottlenecks are demonstrated in on-the-spot shots taken in the yards of the Cleveland Builders Supply Company, producers of concrete blocks and other firms. Among the helpful Towmotor devices featured in the movie are the crane arm, extension forks, revolving carriage, unloader, side-shifter, extension back rest, ram, scoop, upender and overhead guard.

The Vibration Machine Supreme



Vibration under pressure — 7,200 blows per minute—and ruggedly built to give long life, the Joltcrete machine is the choice of the wise concrete-products operator. Produces clean-cut, high strength units in any size, and gets the most out of a bag of cement. Built in three sizes with capacities of 7 to 9 standard units per minute.

Stearns Clipper Stripper Machines; Stearns Joltcrete Machines; Stearns Mixers; Cast iron and Press Steel pallets. Straublox oscillating Attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager **Columbus, Ohio**

Is your cement storage bin 50 feet or more from the siding? Are there any obstructions between storage and siding regardless of distance to make mechanical handling impractical?

Look into the merits of the Robinson Air-Activated Conveyor. With it, you can get shipments in hopper bottom cars; unload each car in two hours or so; and operate season after season without heavy maintenance. Pipes do not clog because the cement does not encrust. There are no continuously moving parts, screw feeds, bearings, etc., that so frequently cause shutdowns and maintenance.

If you wish to save in costs for handling your bulk cement, investigate the Robinson System. Write to us.

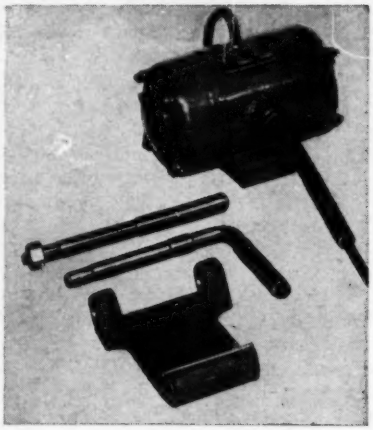
ROBINSON Air-Activated **CONVEYOR SYSTEMS**
Division of
MORSE BOULGER DESTRUCTOR CO.

Representatives in Principal Cities

211-G EAST 42nd STREET • NEW YORK 17, N. Y.

Represented in England by Blaw-Knox, Ltd., London
Represented in the French Union and Benelux by Cie Francaise Blaw-Knox, Paris

PRECISION VIBRATION WITH THE TOP DOG FORM VIBRATOR



Let us help you solve your problem in vibration. Write us for specific information as to your particular problem.

TOP DOG form vibrators available for 110 or 220 volt 3-phase, 60 cycle A.C.

A FEW CHOICE TERRITORIES OPEN FOR DISTRIBUTORS

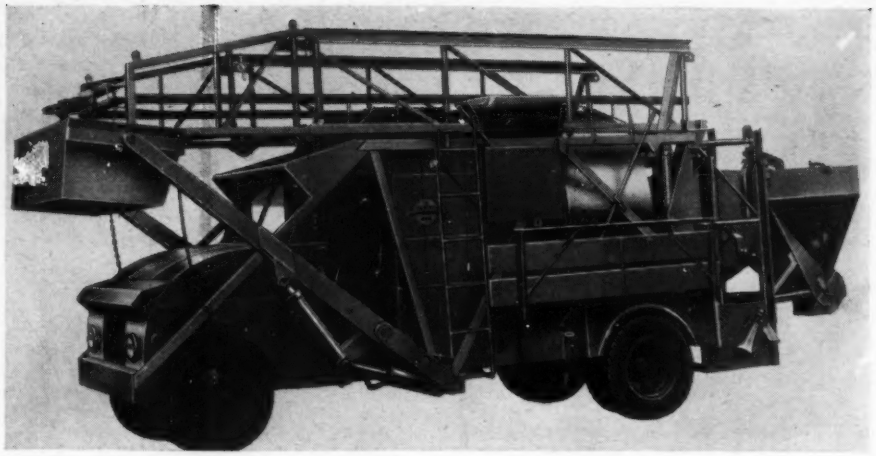
Write for Booklet 21

VIBROPLUS CORPORATION

243 West 55th St.

New York 19, N. Y.

Telephone: Plaza 7-0648



● 1-Yard Mobine Plant

Introduction of the 1-cu. yd. Mixermobile, Model M-6, has been announced by Mixermobile Manufacturers of Portland, Ore. The compact new model was designed to meet the needs of contractors for a machine smaller than the 2-cu. yd. Mixermobile, it was stated. Model M-6, like its big predecessor, is a complete mobile concrete mixing and elevating plant.

The machine has a hydraulically operated, self-loading skip for receiving batched aggregates directly from dump trucks, portable batching plants, or front-end loaders. Although designed for 1-cu. yd. batches, the mixing drum allows for overage. The unit has a standard 35-ft. steel tower, with 10-ft. extensions available. From the mixing drum the mixture is transferred by a dumping "spoon" into the elevating bucket, then hoisted and poured into the storage hopper. Power is furnished by the truck motor, an 8-cylinder Ford industrial engine. A take-off unit transmits the truck motor power for loading the drum, mixing and hoisting. The M-6 Mixermobile can be used with ready-mix.

The new model has several important new features, including the hydraulic operation of the skip and a single suspension drum mounting. The drum is driven by enclosed gears. When the drum is revolving, the mixture can be visually inspected through either front or rear openings of the drum. The water system of the M-6 has been termed "fool-proof". The water meter can be checked and locked, so as to prevent any variance in quantity of water.

As in the 2-cu. yd. model, the operator of the M-6 stands on the cat-walk, controlling the various operations by handling four levers.

Folded for traveling, the M-6 is 24 ft. long and 12 ft. high. It weighs 20,000 lbs. or 6,000 lbs. less than the 2-cu. yd. model. It passes within highway limitations anywhere in the United States and complies with the standard truck highway speeds. An experienced operator can set up or take down the M-6 in 10 minutes or less time.

Trade Notes

The extensive exhibit presented by the Industrial Truck Division of the Clark Equipment Company, Battle Creek, Mich., at the third National Materials Handling Exposition held recently in Convention Hall, Philadelphia, was voted "best in the show" in the first judging of this kind ever conducted by the Materials Handling Institute.

The trophy symbolic of the victory is a sterling silver bowl—a reproduction of a Paul Revere piece—done by Reed & Barton. It was presented to James H. W. Conklin, Clark sales manager, who in turn presented it to the company's manager of advertising, Russell F. Oakes.

W. J. Hartmeyer has been appointed general sales manager in charge of Mineral Pigment Corporation's sales in the United States and Canada. The corporation has established its own division sales offices in the larger consuming areas, with warehouses located strategically throughout the country and Canada.

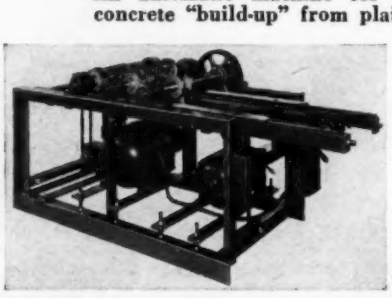
Olin Merson was named assistant division sales manager in the Maryland, Virginia and North Carolina areas.

Philip Fishman Co., sales engineers, 7 Water Street, Boston, Mass., have been appointed the New England representative for the Vacuum Concrete, Inc.

AT LAST — AN EFFICIENT

PALLET CLEANER

An automatic machine for removing concrete "build-up" from plain pallets.



CONTINUOUS

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ECONOMICAL

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SPEEDY

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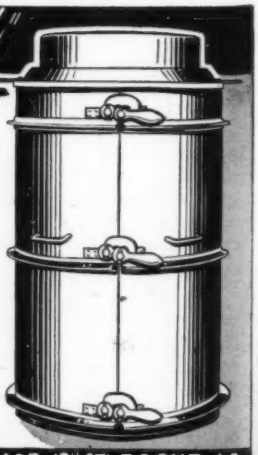
WRITE FOR FREE LITERATURE

BERGEN MACHINE & TOOL CO., INC.

189 FRANKLIN AVENUE NUTLEY 10, NEW JERSEY

THE "Quinn Standard"

FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY: Complete information, prices, and estimates sent on request.

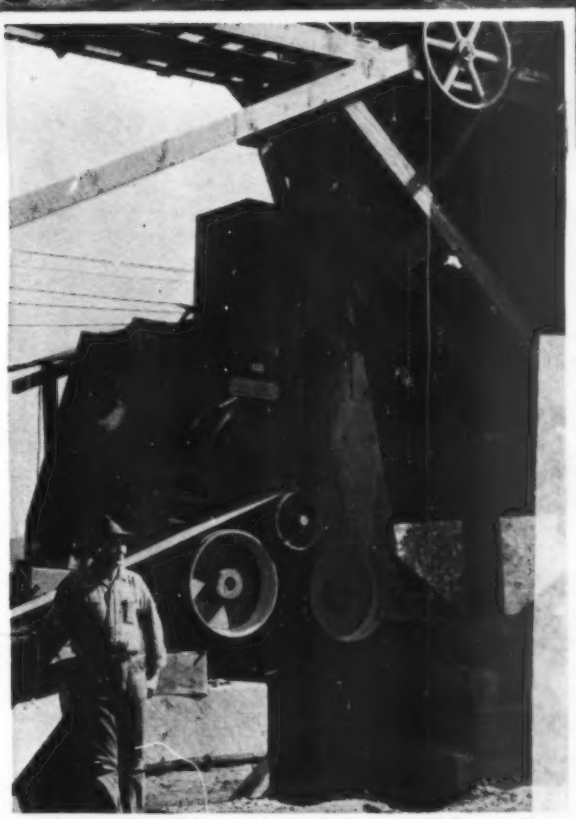
Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IA

In river gravel . . .

Dual Impact Action does it again

INSTALLATION, Canby, Oregon. 1½" minus material from pit is screened out ahead of crusher. All 1½" plus material goes through.



CLOSE-UP, New Holland Model 2020 at work, Canby S and Gravel. Les Gibson says ". . . have fed crusher at of in excess of 100 yards per hour . . . crusher has show evidence of being loaded."

DUAL IMPACT ACTION cuts crushing costs . . . Boosts aggregate production. Read about it —then see it for yourself.

1. ***READ*** what Les Gibson of Canby Sand and Gravel, Canby, Oregon, has to say about the New Holland Model 2020 Double Impeller Breaker his firm bought last fall. Here are the highlights:

"...BETTER THAN WE BELIEVED POSSIBLE

"We are operating in a river gravel deposit. The size of material ranges from sand to a maximum of 18". We have never found rock in the pit that could not be crushed in this 20 x 20 machine.

". . . it is my sincere conviction that this crusher will operate at cost of ⅓—¼ that of a conventional rock processing plant."

2. ***SEE*** what Les Gibson's Model 2020 is doing at Canby, or get in touch with your New Holland distributor. Let him suggest a nearer installation. See the rock that goes in; study the aggregate that comes out—quality and quantity.

REMEMBER whatever your crushing problem New Holland has the answer. Double Impe Breakers come in 4 sizes; work in all kinds of rock; are easily adapted to open or closed circuit operation.

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of The Sperry Corp.

"Ditch" HIGH MAINTENANCE COSTS

Keep your engines clean by lubricating with Texaco Ursa Oil X**

GIVE your heavy-duty gasoline and Diesel engines the protection of *Texaco Ursa Oil X***, and they'll give you many extra hours of trouble-free, full-powered operation between overhauls . . . extra savings in fuel and maintenance.

*Texaco Ursa Oil X*** is a fully detergent and dispersive oil with unusually high resistance to oxidation. It keeps engines *clean,* rings free and valves active. It protects bearings against corrosion — protects all parts against wear. Use it to increase operating efficiency and economy of *all* engines in service.

To assure additional maintenance savings, lubricate chassis parts of all your construction equipment with long-lasting *Texaco Marfak* . . . use *Texaco Marfak Heavy Duty* in wheel bearings . . . and protect crawler track mechanisms with famous *Texaco Track Roll Lubricant.*

Let a Texaco Lubrication Engineer show you how Texaco Products and the Texaco Simplified Lubrication Plan can help you cut costs on every job. Call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

Tune in . . . TEXACO STAR THEATRE every Wednesday night starring Milton Berle. See newspaper for time and station.